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ABSTRACT

This case study of six newly-opened high schools explored: (1) What steps were taken to involve district staff members and community representatives in educational-specifications and design-development work? How effective did these steps prove to be? What impact did this involvement appear to have on the emergent and completed high school project? (2) What goals were established for the project? What specific school features and building elements were created in response to project goals? How were these decisions made? By whom? (3) How did value-engineering activities influence the eventual design of the project? Were design modifications made? What impacts were observed? (4) During construction, how did school district personnel align themselves with the project? Was a planning principal selected? Was a project-management service employed? How were facility-related concerns addressed over the duration of the project? How were educationally related concerns addressed over the same time frame? (5) Prior to the actual opening of school, what steps were taken to ensure the school's successful opening? What impact did these steps appear to have? How were responsibilities assigned and coordinated? (6) In the first six months after the school's opening, what did staff members and students "discover" about the new school? How were these discoveries made? and (7) During the new high school's first and second years of operation, how did staff members respond to the features of the school? To what degree were design visions and corresponding project goals realized in final construction? What lessons did staff members learn as they sought to effectively utilize the school's physical potential? What unanticipated consequences, if any, emerged from these efforts? The six schools studied were: Colville High School in Colville School District, Washington; Kamiak High School in Mukilteo School District, Washington; River Ridge/New Century High School in North Thurston School District, Washington; Lord Tweedsmuir Secondary School in Surrey School District, British Columbia; Westview High School in Beaverton School District, Oregon; and Walnut Grove Secondary School in Langley School District, British Columbia. (Appendices contain documents from the six high schools). (EV)

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LESSONS LEARNED FROM RECENTLY OPENED HIGH SCHOOLS:

A Study of Process and Outcomes

prepared by
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and its Washington and British Columbia Chapters

and
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We cannot recover the past, but we can, within the limits set by nature and history and our own intelligence and resolution, make the future. We do make the future in any case. Even if we are content to let things ride; even if, afflicted with the impervious conservative mind, we strive in vain to return to the good old days - even so, we help to make the future. But in that case, we make it by default; and since we help to make the future in any case, it is better to help make it, not by letting things ride, but by having some idea of where things ought to go and doing whatever is possible to make things go in that direction.

Carl Becker
How New Will the Better World Be?

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A great many people throughout the Pacific Northwest and British Columbia unselfishly contributed their vision, time, and talents to help make this high school study possible. As Project Manager and Research Director, we are both indebted to each one for their interest in this study, their encouragement, and their active participation.

The funding support provided by the Council of Educational Facility Planners International (CEFPI) and the active leadership and funding provided by its Washington and British Columbia Chapters were critical to the project's success. Equally important were the encouragement offered by Mr. Merle Kirkley and the financial contribution made through him by the Chas Beresford Company of Seattle, in association with Collins & Aikman Corporation of Dalton, Georgia. Without such organizational support, this project would not have been possible.

From its inception, this project was guided by a group of gifted advisors. They included: Mr. Glen Anderson, Director of Plant and Facilities in the Kent School District (WA); Mr. Mike Currie, Director of New Construction in the Issaquah School District (WA); Mr. John Mahlum, Mahlum Nordfors McKinley Gordon Architects; and Mr. Hugh C. Skinner, Facilities Planner in the Surrey School District (BC). Meeting monthly, these advisors helped to identify high school study sites, strengthened the research design, and contributed their time and professional wisdom to data collection and the formulation of research findings.

This project could not have been undertaken without the willingness of school administrators, facility planners, and architects to participate in the data-collection visitations to new high schools in Washington, Oregon, and British Columbia. Visitation team members spent time away from work in order to participate, often traveling significant distances. All of them shared in the expenses of their own participation; in an important way, these people, and the school districts and architecture firms they represented, were cosponsors of the this study. Their most important contributions, however, stemmed from their power of observation and ability to ask good questions and listen carefully to the answers.

Several visitation team members contributed additional time to help with the analysis of the visitation data and interpretation of the "lessons learned" across study sites. These important contributors included: Ms. Sue Shannon, Assistant Superintendent of Educational Service District 113 (WA); Mr. Stan Miller, Deputy

Superintendent of the Hillsboro School District (OR); Mr. Chuck Taylor, retired Principal of Shorecrest High School in the Shoreline School District (WA); and Dr. Steve Ladd, Assistant Superintendent in the Beaverton School District (OR).

This project is equally indebted to the participation of the architects, school superintendents, facility directors, and high school staff members associated with the six high schools that served as this study's research foci. They were also generous with their time and thinking. Particular thanks are due to representatives from the Beaverton School District (OR), North Thurston School District (WA), Mukilteo School District (WA), Surrey School District (BC), Langley School District (BC), and Colville School District (WA). At each high school location, CEFPI visitation team members were warmly welcomed, encouraged to ask questions, and helped to understand the nature of the high school project under study.

Finally, our thanks to Kathryn Scotten for preparing the visitation debriefing summaries that served as the primary data source for this report and for editing the report itself.

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I. INTRODUCTION TO STUDY

Why do some new high schools appear to open more successfully than others? Why do some become the object of pride, and others the subject of complaint? What works and what doesn't? How do you get the process back on track when it threatens to derail? (Because at some point it will.) What is success anyway? Is it different in different places? Is it different for different people in the same place? Can the experiences of those who have struggled to design, construct, and open a new high school help others open schools that people are proud of?

Those who have in any way participated in the complex and lengthy work of designing, constructing, and opening a new high school share a collegial awareness of the dynamic nature of this undertaking. They have experienced the joys and frustrations, the satisfactions and anxieties, that arise as a new high school emerges on a once-vacant site and becomes an identifiable element within a surrounding community.

Over the last several years, a number of new elementary and secondary schools have been designed and constructed throughout the Pacific Northwest, as well as in other parts of the United States and Canada. Some of these new schools have received architectural awards and other forms of recognition for their unique design features, their use of distinctive building materials, or their inclusion of new technologies to facilitate teaching and learning. These schools, and a great many others that may be equally well received in their respective communities, seek to realize local educational visions, support existing academic and extracurricular programs, and become a source of pride for community members, students, and staff.

It is certainly true that every school board member, superintendent, school architect, and facility director intends to create a good school: well designed, constructed on time, and completed within the district's established budget. Few indicators of a "successful school" are more apparent, or more desired by project developers.

Unfortunately, these tangible, "bottom line" measurements of success are drawn to a common point of perspective: the time when a project is actually completed and ready for occupancy. That perspective, while important and genuine, overlooks the reality that each new school is expected to serve its community for a period of thirty to fifty years - and to respond throughout that time both to the dynamic nature of educational change and the evolving character of its community.

For all new schools, whether elementary, middle, or high school, a critical measure of success involves the capacity of the school to transcend the period of its construction and remain adaptable to the new expectations and requirements placed upon it by future generations of educators and students. Architectural historian Patricia Waddy makes the following observation.

> Buildings have lives in time, and those lives are intimately connected with the lives of the people who use them. Buildings come into being at particular moments and in particular circumstances. They change and perhaps grow as the lives of their users change. Eventually - when, for whatever reason, people no longer find them useful - they die.

More than a century ago, in 1896, Chicago high-rise designer Louis Sullivan offered the now-familiar dictum, "Form ever follows function." In contrast, Winston Churchill, at the 1924 presentation of awards for the Architectural Association, reflected, “We shape our buildings, and afterwards our buildings shape us.”

In his book *The Walls Around Us,* David Owens places both Sullivan and Churchill in a context that is central to the interests of the CEFPI members who designed and implemented this study of recently opened high schools.

> Every school is a work in progress. It begins in the imagination of the people who built it and is gradually transformed, for better or for worse, by the people who occupy it down through the years and decades. To tinker with a school is to commune with the people who have lived in it before and to leave messages for those who will live in it later. Every school is a living museum of habitation and a monument to all the lives and aspirations that have flickered within it.

At the time CEFPI representatives from Washington and British Columbia first considered the possibility of designing and conducting a study of selected new high schools, several CEFPI members were contemplating the need to design, construct, and open a new high school in their own districts. One such leader, from a district that had not built a new high school for more than twenty years, said, “I must admit, the prospect of doing this in my community, on my watch, has me staying up at night. I’m not even sure what the critical questions are.” In the same conversation, an empathetic architect said:

> One of the difficult things that occurs, when you build something unique, is that you have no prototype to fall back on. There are no available parameters to help you reinforce decisions. There is very little comfort. When things are fluid, only those who are participating in the process understand. Those who didn’t [participate], won’t understand.

The lessons learned and underlying findings documented in this jointly sponsored CEFPI research report reflect the understandings synthesized from visitations to six selected, recently opened high schools in Oregon, Washington, and British Columbia. It is hoped that these understandings will prove helpful to CEFPI members who someday will be asked to collaborate in the design, construction, and opening of other new high schools, in their own communities.

II. STUDY DESIGN AND METHODOLOGY

A. Project Governance

Planning and preliminary design work related to this CEFPI applied-research project was initiated during the fall of 1994. At that time, a governance structure was created to support the project. Chas b. Chisom, AIA, with CMB Architecture & Planning in Seattle (WA), agreed to serve as Project Manager. Richard Withycombe, President of Withycombe Scotten & Associates of Portland (OR), agreed to serve as Research Director and to facilitate the high school site visitations.

To ensure that the project reflected the diverse talents and interests of cosponsoring CEFPI Chapters in Washington and British Columbia, a Project Advisory Panel was formed. Its membership included: Glen Anderson, Director of Plant and Facilities in the Kent School District (WA); Mike Currie, Director of New Construction for the Issaquah School District (WA); John Mahlum, AIA, Mahlum Nordfors McKinley Gordon Architects in Seattle (WA); and Hugh C. Skinner, Facilities Planner in the Surrey School District (BC).

Project Advisory Panel members assumed responsibility for establishing project goals, developing a research design, selecting recently opened high schools for study, and participating in the scheduled visitations, which began in January 1995.

B. Project Objectives

The Project Advisory Panel formulated two, related project objectives, which shaped the design and implementation of the high school study.

- To identify the strategies and methods employed by architects, project managers, and other school district representatives to ensure that a new high school is well designed and constructed and opens successfully.

- To summarize the lessons learned from visitations to selected new high schools in Washington, Oregon, and British Columbia and to make this information available to persons who are interested in the process of designing, constructing, and opening a new school.

C. Study Questions

While members of the Project Advisory Panel were aware that critical research questions might emerge once the study was underway, they did identify a series of initial study questions which they believed would help focus the research conducted within new the high schools.

a. What steps were taken to involve district staff members and community representatives in educational-specifications and design-development work? How effective did these steps prove to be? What impact did this involvement appear to have on the emergent and completed high school project?

b. What goals were established for the project? What specific school features or building elements were created in response to project goals? How were these decisions made? By whom?

c. How did value-engineering activities influence the eventual design of the project? Were design modifications made? What impacts were observed?

d. During construction, how did school district personnel align themselves with the project? Was a planning principal selected? Was a project-management service employed? How were facility-related concerns addressed over the duration of the project? How were educationally related concerns addressed over the same time frame?

e. Prior to the actual opening of school, what steps were taken to ensure the school's successful opening? What impact did these steps appear to have? How were responsibilities assigned and coordinated?

f. In the first six months after the school's opening, what did staff members and students "discover" about the new school? How were these discoveries made?

g. During the new high school's first and second years of operation, how did staff members respond to the features of the school? To what degree were design visions and corresponding project goals realized in final construction? What lessons did staff members learn as they sought to effectively utilize the school's physical potential? What unanticipated consequences, if any, emerged from these efforts?

D. Site Selection Process

In making decisions regarding the specific new high schools to include in this study, Project Advisory Panel members sought to balance their interest in possible research questions with their understanding of the project's financial and human resources. From the inception of these discussions, they agreed on three site-selection criteria.

- The high schools selected should be located in Oregon, Washington, and British Columbia, as a way of anchoring joint sponsorship of the project and facilitating comparisons among projects.
- The high schools selected should be regarded as comprehensive high schools in their respective communities, rather than specialized or alternative high schools.
- The high schools selected should represent different kinds of communities, preferably urban, suburban, and rural.

As Project Advisory Panel discussions related to site-selection criteria continued, two additional selection preferences were identified.

- The high schools selected should include individual schools that opened in different school years (1992-93, 1993-94, and 1994-95), to enable CEFPI visitation team members to explore changes in stakeholder perceptions over different lengths of occupancy.
- The high schools selected should include examples of new schools that occupy critical "birth order" positions in their districts: a new school that replaces the district's only high school facility; a new school that splits the district's only high school to create a second high school in the community; and a school that expands the number of high schools in the district to three or more.

E. Visitation Process

As new high schools were selected for this study by the Project Advisory Panel, a schedule of visitations was created. Identified CEFPI members, school superintendents, and high school principals throughout the region were contacted, to determine their interest and availability to serve as members of high school visitation teams. Each visitation was "staffed" to ensure a diversity of perspectives; each team included at least one architect experienced in school design, one school district representative responsible for facilities, and one school district administrator responsible for secondary education.

At the same time visitation teams were being created, host school districts were helped by the Project Manager to prepare for scheduled visits. Arrangements with host school districts included identification of district personnel, project architects, and other key project representatives who would be available to meet with visitation team members. In addition, the visitation team's interest in descriptive project documents, project time lines, budget information, and floor plans was identified.

Individual high school visitations followed a common format: an initial evening orientation meeting with key project personnel, followed by a two-day visitation schedule at the new high school site. Portions of the on-site visitation involved scheduled meetings with staff, students, and community members who made themselves available to the CEFPI visitation team. The remaining portion of the visitation provided time for individual team members to independently meet with project representatives as a follow-up to the scheduled orientation meetings.

On the final day of each high school visitation, team members were brought together for a facilitated and recorded debriefing of the visit. The project's study questions served as a framework for capturing visitation team observations and reflections. Debriefing reports were transmitted to all visitation team members for review and possible revision. These finalized visitation team reports, along with supplemental project materials, became the basis for the lessons learned and underlying findings presented in this report.

F. Visitation Sites, Teams, and Dates

Using the established selection criteria, the Project Advisory Panel chose six recently constructed and opened high schools for CEFPI team visitations. These six high schools, the dates they opened, the dates they were visited for this study, and the people who served on the CEFPI visitation teams are shown below.

Colville High School
Colville School District, WA

Opened September 1994 *Visited April 26-28, 1995*

Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland, OR
Architect Bob Bryan, CMB Architecture & Planning, Seattle, WA
Superintendent George Murdock, Pasco School District, WA
Director of Facilities (retired) Jim Jennings, Highline School District, WA
Director of Facilities Planning Norm Felix, Mukilteo School District, WA
Executive Director of Operations Tom Brandon, Pasco School District, WA

Kamiak High School
Mukilteo School District, WA

Opened September 1993 *Visited April 19-21, 1995*

Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland, OR
Architect Gordon Graham, Chilliwack, BC
Architect Chas Chisom, CMB Architecture & Planning, Seattle, WA
Director of Facilities Bob Stewart, Gladstone School District, OR
High School Principal (retired) Chuck Taylor, Shoreline School District, WA
District Facilities Planner Hugh Skinner, Surrey School District, BC

River Ridge/New Century High School
North Thurston School District, WA

Opened September 1993 *Visited February 15-17, 1995*

Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland, OR
Architect Chas Chisom, CMB Architecture & Planning, Seattle, WA
Architect Diane Shiner, Mahlum Nordfors McKinley Gordon Architects, Seattle, WA
Deputy Superintendent Stan Miller, Hillsboro School District, OR
District Project Manager Clint Marsh, Kent School District, WA

Lord Tweedsmuir Secondary School
Surrey School District, BC

Opened September 1992 *Visited March 29-31, 1995*

Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland, OR
Architect Chas Chisom, CMB Architecture & Planning, Seattle, WA
Architect John Weekes, Dull Olson Weekes Architects, Portland, OR
Director of New Construction Mike Currie, Issaquah School District, WA
Deputy Superintendent Stan Miller, Hillsboro School District, OR
Architect John Mahlum, Mahlum Nordfors McKinley Gordon Architects, Seattle, WA
Architect David Frum, Meng Architects, Seattle, WA
Director of Plant and Facilities Glen Anderson, Kent School District, WA
Assistant Superintendent Sue Shannon, Educational Service District 113, WA
Assistant Superintendent Steve Ladd, Beaverton School District, OR

Westview High School
Beaverton School District, OR

Opened September 1994 *Visited January 25-27, 1995*
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland, OR
Architect Chas Chisom, CMB Architecture & Planning, Seattle, WA
High School Principal Kathy Siddoway, Lake Washington School District, WA
Director of New Construction Mike Currie, Issaquah School District, WA
Director of Plant and Facilities Glen Anderson, Kent School District, WA

Walnut Grove Secondary School
Langley School District, BC

Opened September 1992 *Visited March 29-31, 1995*
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland, OR
Architect Chas Chisom, CMB Architecture & Planning, Seattle, WA
Architect John Weekes, Dull Olson Weekes Architects, Portland, OR
Director of New Construction Mike Currie, Issaquah School District, WA
Deputy Superintendent Stan Miller, Hillsboro School District, OR
Architect John Mahlum, Mahlum Nordfors McKinley Gordon Architects, Seattle, WA
Architect David Frum, Meng Architects, Seattle, WA
Director of Plant and Facilities Glen Anderson, Kent School District, WA
Assistant Superintendent Sue Shannon, Educational Service District 113, WA
Assistant Superintendent Steve Ladd, Beaverton School District, OR

III. EXTERNAL AND INTERNAL PROJECT INFLUENCES

LESSON LEARNED: While all the high schools studied shared some planning, design, and construction attributes, each was distinguished by the influences of external and internal factors and by the way these were anticipated and managed by district and project leaders.

A. State and Provincial Funding Provisions

The six new high schools selected for this CEFPI study are located in Oregon, Washington, and British Columbia. The identification of schools across governmental borders provided CEFPI visitation teams with opportunities to identify differing school-construction funding provisions. This, in turn, helped to create a framework for assessing the impact of these funding differences on project planning, design, and construction.

In Oregon, funds to construct new schools come entirely from taxpayers living within the boundary of the school district wishing to construct a new school. The size, design, and cost of that new school depends on the willingness of local voters to approve a school-construction bond measure in an amount sufficient to cover estimated project costs.

In Washington, funding for school construction is proportioned through a matching formula that establishes the extent of state funding a project is qualified to receive and the portion of a project's cost that must be provided by local residents. Depending upon qualifications with respect to established criteria, individual projects receive proportionately greater or lesser levels of funding support from the State of Washington's school construction fund.

Financial support for a school construction project in British Columbia is entirely funded by the Ministry of Education, of the Provincial Government. Such funding is made available after a project's importance has been determined by ministry officials. Once project priority is established, funding support is provided in an amount that enables project planners to construct a specified number and type of school spaces, sufficient to accommodate a particular educational program. This defined program is derived from information linked to existing school district enrollments and the level of student participation in specific educational programs.

Project planners in Oregon, Washington, and British Columbia must come to acquire the particular expertise needed to effectively secure project funding in their own community, state, or province. In Oregon, this expertise focuses on gaining sufficient voter support to pass a school-construction bond measure. In Washington project planners have similar concerns, but their efforts must also incorporate the states' role in funding. Planners in British Columbia become skilled at working collaboratively with Ministry of Education official and appear to spend proportionately less time developing the relationship with local residents that is so essential to school funding in both Oregon and Washington.

The implications associated with different patterns of school funding in Oregon, Washington, and British Columbia are significant. In Beaverton, Oregon, planners involved in the design and construction of Westveiw High School were aggressive in their determination to involve a great many community members in school planning work. Their comments to the CEFPI visitation team reflected this.

> One of the critical things that occurred is that we took a very important step: we decided to make this a community project, one that would significantly involve parents and others throughout the Beaverton community. If someone raised his hand and said "will you come and talk?" we went. We

> met people in living rooms, in restaurants... wherever people would meet with us.
>
> Community involvement and input essentially took two forms: work designed to detail the various issues surrounding the school and its relationship to the neighborhood, and providing access points to those people who just showed up and offered to participate in the project in some way. We did a lot of work with the surrounding neighborhood. We talked about ways to make the school more attractive to neighbors. We worked together to develop strategies that would reduce traffic congestion. Ideas from the community contributed to eventual plans that helped to secure the school grounds and create visual barriers. A number of these same community members were included in the process of developing educational specifications for Westview.

Planners involved in the development of each high school visited in Washington also sought to actively involve members of the community in project-related activities. Perhaps nowhere among the school districts visited was this more true than in Colville, Washington, where seven school-construction bond defeats produced a dynamic process of community involvement that led to bond passage and carried over to significant community involvement in school design.

In CEFPI visitations to Surrey and Langley, British Columbia, community involvement was less apparent in participant accounts of planning activities.

Taken together, these observations across the six sites suggest that the degree of community "ownership" for funding a new school's construction may influence, consciously or unconsciously, the pattern of community involvement in subsequent phases of the funded project. The full or partial contribution of a local community to school construction funding appears to produce community expectations for meaningful involvement in that project. In turn, these community expectations obligate project planners to introduce entry points for community involvement and strategies for sustaining that involvement.

B. Prevailing Economic Climate

In Colville, where voter support to fund the construction of a new high school had been difficult to secure, a project representative told visiting CEFPI team members, "We learned that, in this community, you sure don't try to pass a bond measure in November, when everybody is laid off from the mills; you go out in March, when the flowers are blooming."

The perceptions of community members regarding economic conditions may greatly influence the timing of school bond measures, patterns of election results, and levels of funding made available to support new school construction. These perceptions, and their influence on community funding support, appear to overshadow even broad-based community agreements regarding the extent and nature of actual school-construction need.

Whether in British Columbia, where CEFPI visitation team members found that provincial economic conditions influenced school construction funding, or in Washington and Oregon, where more localized economic conditions created this influence, the timing of the new high school's construction never coincided with the time the new high school was actually needed. In each school district visited during this CEFPI project, high school facility need ran well ahead of available high school funding support. The implications associated with this study conclusion are significant.

- New high schools arrive in their respective communities well after they are actually needed. As a result, the occupancy of a new school when opened may already approach the school's design capacity.

- The late arrival of funding and the time required to design and construct the new school may force school officials, architects, and construction personnel onto a "fast track" that can lead to both design and construction shortcomings.

- Limitations in available funding frequently require that ongoing school-design or construction-modification decisions be made by project planners. The impact of these decisions can constrain the new high school's ability to adequately support current school-use interests and meet emergent educational needs.

- Any unsatisfied community expectations associated with the new high school can adversely impact community support for future school-construction projects.

C. Project Review and Approval Procedures

Each new high school project visited had been impacted to some degree by local and state or provincial building review and approval procedures. During CEFPI visits, local project planners associated with each new high school voiced frustration over their attempts to receive timely and helpful "sign-offs" from a host of governmental units that each had some project review obligation.

While realizing the need and importance of such reviews, project architects and facility directors described their own project's review process in terms that ranged from anger to disappointment. The size or location of the community in which the project was planned did not serve to differentiate the experience. A combination of factors appears to account for project review and approval delays. Agency funding restrictions limit the staffing capabilities in government offices where review work is done. Ongoing patterns of regional or local growth dramatically increase the number of building projects requiring review and approval. As local land-use restrictions and building-code requirements evolve in response to heightened public awareness and concern, local officials vested with review responsibilities take longer to complete their work.

Despite these influences and their impact on individual new high school projects, all project planners found ways to maintain or even accelerate project time lines. Several facility directors suggested that they had screened architects to determine past success in moving other projects through building review and approval phases. Some architects, in turn, had designated personnel within their firm to manage and monitor all project-review activities. Finally, some school districts employed project management firms to oversee elements of this work.

While each of these strategies helped to reduce the time required by governmental agencies to evaluate and approve project plans and documents, no project visited was entirely free of delays. In the end, several project planners focused on developing effective, personalized working relationships with agency representatives responsible for document review and approval. This emphasis, combined with regularly scheduled meetings and enhanced communication patterns, helped to accelerate project-approval time lines.

D. Educational Reform Initiatives

After a long period of national neglect, new concern for schools arose during a period of inquiry and evaluation that began with the 1983 report of the National Commission on Excellence, *A Nation at Risk*. Over the remainder of that decade and continuing into the present, provincial leaders, governors, superintendents, and school board members have sought to bring about school improvements.

In various research publications, foundation reports, and "blue ribbon panel" summaries, reactions to the perceived quality of public education were most often expressed in largely negative ways. Drop-out rates were high. Academic standards appeared to have been lowered. Students lacked essential basic skills. Public satisfaction with schools, when measured, was diminished. Although critics pointed to every level of public education, their harshest criticisms were most often directed toward America's high schools. Here, observers noted that few school improvement initiatives had succeeded in bringing about either significant or lasting changes in the look or feel of traditional high schools. Many high schools retained a departmentalized appearance. Few schools had explored flexible uses of time, individualized instructional strategies, or opportunities to develop creative educational partnerships within their communities.

Throughout the remainder of the 1980's, highly respected educators began to identify strategies that appeared to hold promise for improving the quality of secondary education in the United States. Sara Lawrence Lightfoot, in *The Good High School: Portraits of Character and Culture,* offered in-depth descriptions of six high schools located in different regions of the country, focusing on efforts to determine what makes a good high school.

Vito Perrone and Associates, in *Portraits of High Schools,* and Ernest L. Boyer, in *High School: A Report on Secondary Education in America,* also sought to contribute to an understanding of secondary education through descriptions of school practices in a geographically diverse sample of high schools.

The six high schools in British Columbia, Washington, and Oregon included in this CEFPI study each "grew up" in the atmosphere of secondary school reform that was energized by these and other research reports. Project planners sought to understand the implications of provincial or state school-reform plans and to translate school improvement interests into tangible school designs.

Although variations exist with respect to governmental education policies in British Columbia, Washington, and Oregon, school reform themes are similar across geographical areas. In British Columbia, for example, the Ministry of Education's school improvement interests were disseminated in a report entitled

Improving the Quality of Education in British Columbia, followed by a comprehensive set of reform strategies introduced in the *Kindergarten to Grade 12 Education Plan.*

These documents, like their counterparts in Washington and Oregon, identified changes designed to improve education in both urban and rural settings. Elements of the ministry plan require curriculum changes that seek to prepare students "for the real world." Examples of such changes include:

- more work experience to help students connect what they learn in school with what they need to learn to be successful in post-secondary training and in the workplace;
- requirements in grades 9-12 that students develop a personal learning plan that encourages students to set, evaluate, and revise goals for learning;
- better information and communication resources to ensure that students know how to use computers and develop the technological literacy demanded in the workplace; and
- more emphasis on practical applications of learning, to ensure that all students understand both the theory of what they are learning and how it can be applied in the real world.

School-improvement policy statements such as these provide a focus and direction for curriculum specialists, school administrators, and teachers. They are not, however, statements that offer obvious direction to school facility planners. Despite this limitation, representatives associated with each high school visited were influenced by provincial or state school-improvement policies and sought to extrapolate school design implications from them.

E. Visitations to Recently Constructed Schools

In addition to the four other external factors identified above, planners of each new school visited were influenced by their visits to recently constructed and opened high schools. Such visits, often involving a diverse team of school district and community representatives, contributed ideas that influenced school design and helped to establish a clearer sense of value and design priority among project participants.

In Beaverton, project architects and selected members of the school's design team were encouraged to visit recently constructed and opened high schools across the United States. Project representatives stressed the importance of these school visits.

> During the school design phase, we spent a great deal of time trying to imagine the various ways that the school might be used. We identified as many scenarios as we could think of, to determine if the school could effectively accommodate all of our desired uses. We were able to go out and look at schools all over the country, too. This enabled us to formulate additional scenarios and acquire additional design implications. We began to see schools in new ways. We came to see that the physical characteristics of the school weren't as great an influence as staff and programs.

School design work for River Ridge High School, which opened in September 1993, began in 1987. No other high school project visited in this CEFPI study committed itself to such a lengthy design phase. During the time spent planning, project leaders associated with River Ridge High School sought to formulate a base of research and "best practices" that could serve as a vision for the design of their new high school. Planners were encouraged to "invent" a school and classrooms "in which the alterable structures of time, task, authority, reward, grouping, and evaluation" were appropriately suited to students and through which their successful learning could be ensured. Visitations to other recently opened high schools contributed to this planning process.

In Colville, staff members also took advantage of opportunities provided to visit other recently opened high schools. A CEFPI visitation team member noted, "Many things were done masterfully. One of them was the use of resources to support staff travel to other schools. They used their resources very thoughtfully and got back a lot of value." A second team member identified a subtle strategy imbedded in Colville's school visitation process. He suggested, "They didn't send the architect with the staff on visits. They did this not to save money, but because it obligated each staff member to come back as an expert to brief the architect. It added to the staff's sense of responsibility and expertise."

F. Visionary Leadership

Each new high school visited as a part of this CEFPI study grew from a vision established by one or more key project representatives. Most often, that representative was the district's superintendent. Sometimes, the vision was most influenced by a planning principal. Occasionally, it reflected a collective expression of intent and value, produced by a team composed of school district and community representatives.

Evidence drawn from visited high schools suggests that, once formulated, new high school projects "run on the rails" of the vision articulated by a significant project promoter. From a project's inception, this vision provides guidance to design, contributes to identification and prioritization of spatial requirements and relationships, and offers an initial expression of the school's eventual character and place within the surrounding community.

Visitations to these six, different communities discovered evidence of real variation in the nature of the visions articulated for their new high schools. These differences in vision contributed to the uniqueness of each new high school.

Planners associated with River Ridge High School drew inspiration and encouragement from a superintendent they all described as a visionary leader. One key participant made the following comment.

> This project was put in place by a superintendent who had a very distinct commitment to design and construct a school that would move our educational restructuring agenda forward. The focus of this agenda is on students and their learning. Over the course of this project, we went through three superintendents, beginning with the original visionary one. Our planning work and the documents that it produced helped us to maintain benchmarks. They kept our vision in front of us despite changes in leadership. We have come to see the critical importance of such vision. It was a key to our success.

Superintendents associated with the other new high schools contributed visions that differed from the vision associated with River Ridge. In Beaverton, a portion of the superintendent's vision centered on the place of the school in the community and the importance of designing a new high school that reflected community values and aligned well with the overarching culture of the school district. A project respondent shared the following reflection.

> The role of the superintendent is very critical to the process of school design that we eventually chose and followed. In our case, the superintendent was very committed to community involvement and outreach. He envisioned the school as an important center of community life. The decision was made early that this school would not be "a funny farm." We were determined that it would have what other high schools in our district have, and that it wouldn't have what other schools didn't have.

Those involved in helping to plan Kamiak High School were drawn to a vision of the school that centered on creating a college-like campus that would facilitate a student-centered school environment. A planner offered the following comment.

> Based on our vision, some people had to sit down and really seriously think. They couldn't come back and just redesign our existing high school. We tried very hard to create a student-centered school environment. We had this as an objective. We sought to create some important adjacency relationships between the "social heart" and the "academic heart" of this school. Within the framework of our financial resources, we also sought to make this school as technologically advanced as we could make it.

In Colville, vision for the new high school came from several sources: the superintendent, the high school principal, and a diverse group of community members. This vision, however, appeared to have its greatest impact on creating community support for a new high school and the passage of a school-construction bond measure.

School district representatives in Colville selected the architect who had designed a high school they had visited in another community, and liked. That completed high school became the prototype for the new Colville High School. However, this prototype design was revised to reflect the principal's clear vision of the new high school's importance to the community and its value for enabling thwarted educational programs to thrive in a more well-designed school.

In British Columbia, funding support for school construction projects comes from the Ministry of Education. As a result, there appeared to be less need for a direct dialogue with all segments of the local community, as an integral step in acquiring funding commitments to enable a new school project to begin. This reality, however, did not appear to lessen the importance of shared vision held by project planners, architects, and involved school district staff.

Lord Tweedsmuir Secondary School, in Surrey, and Walnut Grove Secondary School, in Langley, both reflect their planners' intent to design a school that complements the character of the surrounding community and provides significant opportunity for community access and use. This vision appeared as a critical influence on site selection, school design, and the use of building materials to blend with surrounding neighborhoods.

The community of Cloverdale, in the Surrey School District, had adopted a plan for redevelopment of its core area, adjacent to a park and recreation complex. New construction plans were encouraged to reflect a "heritage" theme. Architects involved in the design of Lord Tweedsmuir effectively translated this heritage theme through their use of traditional building materials and building elements that contributed to a more traditional school character.

Walnut Grove Secondary School planners also sought to align the new school with its surrounding community, featuring sloped roofs and large overhangs to reduce the scale of the school and enable it to fit well within a residential neighborhood. With its location adjacent to a municipal park, planners of Walnut Grove Secondary School were able to make use of community play fields and tennis courts and contribute needed parking to users of the municipal fields after school hours. A similar cooperative arrangement was achieved by planners of Lord Tweedsmuir Secondary School in Surrey.

G. Continuity of District Leadership

The vision that appeared so important to each new high school construction project was typically formulated and advanced by a single school district leader.

This leader was most often the district's superintendent. However, a close working relationship between the superintendent and other district leaders often resulted in a shared vision that successfully transcended the administrative structure and organizational culture.

The realities of the individual projects visited by CEFPI members produced evidence of the critical value and importance of a transcendent vision. No high school studied was opened by the same school superintendent who had contributed to its initial development as a project or to its design. Indeed, several high schools visited were planned, constructed, and opened over a period of time that embraced the tenure of as many as three superintendents.

CEFPI visitation team members found that, when significant school district leadership changes occur over the course of a high school project's development, the original vision can easily be diluted or modified. To minimize this risk, other key project representatives must consciously take steps to ensure that a historical record of important project decisions is maintained and that new school leaders are effectively oriented to the project.

H. Birth Order of the New School

The high schools selected for this CEFPI study occupied different birth order positions in their districts: a new school that replaced the district's only high school facility; a new school that split the district's only high school to create a second high school in the community; and four schools that expanded the number of high schools in the district to three or more. This high school selection criterion was adopted in the belief that a school's particular place in its district's birth order might be a significant variable in promoting, designing, and opening the new school.

New high schools occupying the same birth order position in different school districts may present similar risks and challenges to their respective planners. The risks and challenges may be greatest when a new high school splits the district's only high school to create a second high school in the community. However, other birth order positions carry ample apparent risk.

New high schools, such as the one in Colville, that replace a district's only high school face several challenges as they move from inception to project completion. The high schools these projects are created to replace are older, outdated structures that lack the capability to adapt to current educational expectations and requirements. Staff members who are involved in designing the replacement high school place a priority on fixing the deficiencies associated with the older school. This focus can draw attention away from other design priorities that are important to ensuring that the new high school will accommodate future educational interests.

In addition to this challenge, planners working within a smaller school district may not have easy access to the full range of facility-planning or construction expertise that is readily available on staff in larger school districts. This reality places a significant burden on all staff with project responsibilities.

Finally, staff members associated with the task of designing a replacement high school can easily assume that the new school must accommodate all existing educational programs. In design discussions, this can lead teachers and other school staff members in the direction of explicitly determining and describing their own future instructional or administrative space needs. Although this design context may help to ensure that the existing staff is satisfied with the new high school, it may not simultaneously produce a design that successfully transcends the current generation of staff or contributes to long-term adaptability.

New high schools, such as Kamiak in the Mukilteo School District, that become the district's second high school can produce even more significant challenges for planners. For the first time, a community is divided between two high schools. The district's original high school retains its emotional linkages to the community, because of history and tradition. The new high school trades these stabilizing attachments for whatever improvements community members and staff believe can be found within the new school facility.

When creating a district's second high school, planners must also give significant thought to the process of staffing the new school, developing school attendance boundaries, and providing resource support to equip and open the new school. Each of these complex decision sequences can be the source of both in-district and community-based criticism.

Finally, the introduction of a second high school within a school district raises issues associated with equity. The new high school is new; the original high school is older. The new high school corrects many of the older school's deficiencies and introduces new capabilities. Depending upon location within the community, the new high school may be viewed as available to the newest residents of the community and distant from those long-time community members whose support has been essential to the district's historical development.

New high schools, such as Westview High School in Beaverton, that expand the number of high schools in the district to three or more present planners with many of the challenges that occur when a district adds a second high school. Staff selection, boundary determinations, and resource allocation decisions all influence the school's opening. Issues of equity between high schools must also be addressed.

1. School Site

Each of the six new high schools included within this CEFPI study faced complex problems with respect to location and the suitability of the available school site. These problems required project planners to find creative solutions that would enable the project to move forward in a timely manner, without incurring significant additional costs or loss of community support.

In Beaverton, the superintendent and staff involved in planning Westview High School were confronted with a choice between two alternative locations for the new school. Each location had some level of community support, but neither could attract sufficient support to avoid controversy. One planner made the following comment.

> The high school siting decision proved to be a very difficult issue. It was a lightning-rod issue for us, in fact. One possible location for the new school was in the northern portion of our school district. The alternative site was in the southern part of the community. We eventually hired a consultant firm to evaluate both sites and to convene community members to discuss their perceptions of relative site value. They did a very fine job. It enabled our district staff to keep out of the spotlight and away from direct community fire.

With the choice of the northern site made, Beaverton School District representatives turned their attention to developing a good working relationship with all those living around the chosen school site. This effort to "demonstrate that we would be a good neighbor" proved to be critical to the school's successful opening. A district representative offered the following perspective.

> The district's agenda throughout this process was extremely complex. We wanted Westview to open successfully. We did a lot of work with the surrounding neighborhood. We talked about ways to make the school more attractive to neighbors. We identified strategies that would reduce traffic congestion. We drew ideas from neighborhood meetings regarding how to

> create visual barriers between the school and nearby homes and how to secure the grounds so that students would not wander through home sites or disturb the surrounding community. We were under a great deal of community pressure to demonstrate that we would listen and act on the basis of what we had heard.

In Colville, residents had come to regard the original, downtown high school as a center of community life. Community members and school planners hoped to construct the replacement school on the existing high school property, to maintain convenient community access to the school. Unfortunately, the space requirements of the new high school and its surrounding grounds proved too large for the downtown property.

Following a period of vocal community dissent, district representatives acquired a 32-acre parcel of land away from the downtown area and resolved to construct the new high school on this property. Although the new site satisfied school design requirements, it did not conspire to facilitate easy community access. A portion of the vision for the new high school was necessarily modified, because of the school's eventual location. Community members could no longer walk to the high school campus. Many more high school students required bus transportation. The school and its students lost easy access to an adjacent, downtown city park. People who desired to see the new high school remain a community center faced both a physical and emotional adjustment.

School district planners and project architects associated with the development of Lord Tweedsmuir Secondary School in Surrey faced a complex and intricate school-design and construction challenge, because of that school's established location and the district's desire to amalgamate the senior secondary school with an existing junior secondary school.

The site was sloped and relatively small, and it was already the location of an older school serving 600 students, that was to be kept in service during the construction of Lord Tweedsmuir. This circumstance would require that the new secondary school be constructed in phases, with alternating periods of demolition work and new-construction activity occurring on site.

In the project's initial phase, approximately eighty-percent of the new school was constructed on the parking lot of the existing school, with temporary staff and student parking provided at an adjacent municipal property. Upon completion of this initial phase, secondary students in grades 11-12 moved into the new facility.

In the project's second phase, major portions of the old school were demolished, leaving only the existing gymnasium, music, and drama facilities. These were kept operational, while new counterparts were built on space that had been occupied by the old school's industrial education program. When these facilities were completed, the remaining portion of the old school was torn down, permanent parking areas were built and students in grades 8-10 moved into the completed new school to join the existing students in grades 11-12.

CEFPI visitation team members who met with Lord Tweedsmuir Secondary School planners appreciated immediately the difficult circumstances they faced as they mapped and executed plans for building this new school. One visitation member came to the following conclusion.

> The architect Lord Tweedsmuir appears to be a vital, twinkling person. Great passion was formed within this project, because of the complexity of the site and the difficulty of clearing a space to build the new school. There was an obvious passion here for attacking and solving this problem.

IV. PROJECT GOALS AND RELATED PROCESS CONSIDERATIONS

LESSON LEARNED: The high school projects studied appeared to have been developed to achieve two kinds of goals: goals that addressed school board requirements and management expectations and goals that reflected community interests, educational desires, and instructional expectations.

Each new high school visited by CEFPI representatives was designed, constructed, and opened in accordance with a set of goals formulated at its inception by project planners. These goals conveyed what each district believed was most important to accomplish with respect to the project. Some goals were extrinsic to the school itself; these served to delineate district expectations and project requirements. Each project also identified intrinsic goals that described the qualities and features that would establish the new high school's character and capabilities.

A. Extrinsic Goals

All six new high schools included in this study shared a set of similar extrinsic goals. Seemingly straightforward, these goals were in each case, necessarily, formulated in a unique local context that complicated attainment of some or all of them. These shared goals were, that the new high school would:

- meet district expectations for student housing,
- be available for occupancy on time,
- be completed within assigned budget, and
- emerge as an integral part of the school district.

After a decade of static enrollment growth at the secondary level, many school districts in Oregon, Washington, and British Columbia began to experience significant enrollment surges in the late 1980's. At the time they were visited, four of the districts in this study - Langley, Surrey, Beaverton, and Mukilteo - were among the most rapidly growing communities in the Pacific Northwest.

In such communities, new high schools are needed well before they can be designed, constructed, and opened. It is not uncommon for new schools to open with enrollments that approach their design capacities and soon exceed them. Coincidentally, the Beaverton School District announced its intent to place portable classrooms on the Westview High School site during the CEFPI visit: four months after that school opened.

In Beaverton, school board policy supports the use of portable classrooms as a short-term housing solution for enrollment growth. The Mukilteo School District chooses to maintain as much as ten-percent of its student body in portables, as a contingency against enrollment fluctuations.

Although school district policies may permit or even encourage the use of portables on school sites, the early appearance of temporary classroom space can create public information and public relations headaches for facility planners. Community members may respond angrily, with suggestions that planners underestimated enrollment growth or failed to design the new high school to accommodate such growth. As one facility director stated, "We end up looking bad, even when we've done a very good job of creating quality space to support enrollment growth. Sometimes it feels like you just can't win."

At one time or another, and to differing degrees, school facility specialists at each school district visited had struggled to ensure that the new high school would be available for occupancy on time. Complex school-siting problems, document approval delays, adverse weather conditions, and unanticipated construction complications most often contributed to this difficulty.

A combination of such factors caused Westview High School to open two days late. Despite this delay, project representatives judged that the school had opened successfully. CEFPI visitation team members concluded that the lack of negative community reaction to the late opening was both a byproduct of trust formed with the community over the length of the entire project and an indication that the definition of "successful opening" is more complex than that.

> It is possible to never recover from the battles that ensue if you don't get the school open on time. Surprise housing makes parents come unglued. Here, they had a problem, and they were able to address it thoughtfully, and they effectively prepared the community in advance.
>
> The key variable seems to be honest, up-front, and frequent communication with parents, teachers, and other community members. If the project falls behind, be open and then fix it. You plant the seeds of trust at the beginning of the project. If this trust isn't established early and maintained, the project will begin to acquire a smell. Uninformed members of the community will then begin to believe those hecklers who are saying that you didn't know what you were doing.
>
> Isn't it obvious, open on time? However, I have difficulty putting that forward as a definition of success. There's something else. Once the contractor has left, something happens. The students and the community begin to evaluate it.
>
> They decide whether it's a success. I opened a school that wasn't finished. The superintendent gave the welcome standing on a truck - but within six months that school had a wonderful feeling. I've also opened schools that were spotless, and people started complaining right away.

After participating in several visitations, one CEFPI visitation team member offered the following observation on the difficulty of maintaining a project schedule and ensuring that a school is available for occupancy on time.

> It takes so long, and it is so difficult to get the funding needed for these very expensive high school projects. There is often great enrollment pressure, and the new school is needed yesterday. We commit ourselves to an aggressive and very demanding project schedule, that's very close to the minimums needed to complete each phase of the project. If anything at all goes sideways, we haven't given ourselves the opportunity to correct the problem and get back on schedule. We should seriously question whether 14 or 15 months is enough time to construct a new high school. I doubt that it is. I also doubt that we can do much about it.

The six new high schools visited in this CEFPI study varied significantly in cost, ranging from a low of approximately $13 million to a high of slightly more than $50 million. This variation reflects several factors, including: differences in scale, including enrollment capacity; regional differences in construction labor and materials costs; and differences in site-development requirements.

While each school visited was described as costly by school district representatives, all schools were impacted to some degree by budgetary restrictions that required planners and project architects to make budget reduction decisions. These decisions most often caused planners to scale down plans, choose less costly materials, limit furnishing and equipment purchases, or reject facility enhancements that had been identified as bid alternatives.

Faced with budget reduction needs, project representatives were forced to make choices among possible budget reduction options. Most often, project planners determined to reduce project cost by withdrawing some space from an element of the school. CEFPI visitation team members found that, whenever possible, planners sought to remove space from "around the edges of the school," to avoid negatively impacting the school's core facilities or areas designed to support particular educational programs.

B. Intrinsic Goals

At each school, the people involved in its design phase identified a set of project goals that, unlike the extrinsic goals discussed above, would help to establish the new high school's essential physical and aesthetic makeup. These more intrinsic project goals served to translate the school's vision, suggest particular design implications, and lay a foundation for the school's educational specifications and schematic design.

Each new high school visited was designed to reflect community interests, educational desires, and instructional expectations. Goals established by design team members most often reflected these values. Although they differed in their specifics, most of the intrinsic goals found across projects fell within the following categories. Planners hoped the new schools they were designing would:

- become a source of pride in the community,
- support existing educational programs,
- ensure flexibility and adaptability in the future,
- establish a professional work environment for staff,
- create a personalized learning environment for students,
- facilitate community use,
- ensure safety and security for students and staff,
- integrate technology and provide for future technology,
- support educational innovation and restructuring efforts, and
- be easy to maintain.

Individual school districts followed different paths in their efforts to identify and adopt these more distinctive goals. These differences in process, while not producing greatly different project goals, did result in significantly different patterns of staff and community involvement and levels of "ownership" of the school design.

In Beaverton, more than 40 representatives of the district's staff and community participated in the new high school's design work. These design team members were guided through their work by both project architects and a facilitator employed by the district to help organize design tasks, promote collaborative problem-solving across all levels of project participants, and sustain effective communication. Project participants who met with CEFPI visitation team members stressed the importance of the district's design process.

> We worked together during the educational specifications process to identify project goals and space needs. The list of original space desires totaled more than 400,000 SF, and we had to get it down to approximately 260,000 SF. We were able to do this in a very collaborative way. Members of the design team were actually willing to speak out for other people's needs, and they gave up space to their colleagues. It was amazing. The thrill of being part of a team given the responsibility to design something new is great and long-lasting. We found that the best way to produce a successful school opening was to extend ownership of the new school to as many people as we could.

Planners associated with the design of River Ridge High School worked together for more than three years to formulate plans for the school. Throughout that extended time frame, district staff and community members met in teams to consider how the new high school could support the district's commitment to restructuring and innovative instructional practices. One key project planner made the following comment about that process.

> Our project was noteworthy for its collaboration. This evolved from the district's history. We had developed very good working relationships with each other well before the project actually began. As a facility specialist, you have to learn to work well with educators. You don't want to design and construct a school that will become the focus of their criticism.

In both Surrey and Langley, British Columbia, the identification of project goals and related school-design decisions were the responsibility of a smaller group, a collaboration among facility specialists, project architects, and the designated planning principal. Proportionately fewer teachers were involved, although staff representatives were brought in to help design specialty education areas, such as shops and science classrooms.

In Colville, planners designed and activated a broad-based input and shared decision-making process, which engaged many members of the community and all of the district's high school staff. One CEFPI visitation team member noted, "This is a one-high-school town. There's no choice about involving the entire high school staff. To not involve them would be to cut your own throat."

Students were also involved in designing the new Colville High School. Their suggestions led to the design of significant elements of the commons, and the landscape murals located on its walls were designed and painted by students. Student contributions helped to ensure that the commons would be an inviting place for students during lunch periods and scheduled breaks, as well as a comfortable and welcoming place for parents and community members after school hours.

In part because of the principal's leadership throughout the design process, community, staff, and students developed an enormous enthusiasm for the new school's design and for the role the new high school could play in the life of the

Colville community. This sense of passion for the new high school was identified by several CEFPI visitation team members.

> My thoughts go back to the commitment and energy that was generated here. I would have loved to have been involved. I'm sure that, with my own background in educational planning and architecture, I could have assisted them with the physical structure of the school, but I couldn't have contributed to the energy. That wasn't brought in from outside. That was generated here, and it is still here.
>
> I was most impressed by the credibility that they managed to achieve in the process of funding, designing, and constructing the high school. That is the reason people are so happy. It wasn't token involvement. The credibility of the process manifested itself in the final project outcome.

School design work directed toward the development of Kamiak High School began four years before the district was able to begin construction. It involved a number of district staff members and was facilitated by an educational specifications consultant who helped encourage team members to conceive a design that would be student-centered and that would create critical relationships between the "social heart" and the "academic heart" of the new school. Emphasis was placed on the establishment of a collegiate environment, a campus that included a district-wide performing arts center and a competitive swimming facility.

As the project materials included in the appendices demonstrate, the pursuit of the intrinsic goals established by each high school's design process led to project outcomes of different kinds: architectural, educational, financial, and human. The values that generated each project's distinctive vision and the dreams of staff and community members were necessarily drawn into contact with the realities of school construction schedules and finite financial resources. Trade-offs between outcomes were understandably inevitable.

In whatever ways the six new high schools visited are similar or different, they shared a common design imperative: to serve as good schools in their respective districts well into the 21st century. The CEFPI visitations to these schools occurred shortly after each new high school opened. Staff members were just becoming familiar with their new surroundings and were discovering new ways to draw upon the potential that each new high school represented. As time passes, the importance and value of the risks planners took to create new and different high school environments will be tested and retested by future generations of students and staff members.

V. OPPORTUNITIES FOR FURTHER STUDY

This high school study has helped to identify a number of applied-research opportunities that can contribute to CEFPI's mission of encouraging facility-related action research and supporting the diverse personal and professional-growth interests of its members. These research opportunities are of two types: those that relate to and grow out of this project; and those that introduce new study topics, with significantly different applied research interests and values.

A. Follow-up Study Opportunities

The six high schools that served as the foci of this study were designed and constructed in accordance with the particular visions and values held by local project organizers, contributing staff members, architects, and community representatives. While all share some common physical elements, each is arranged differently, to support different beliefs regarding the future direction of secondary education and the ways a new high school must accommodate changing educational requirements and expectations.

Just as the external appearance of each school differs, the ways each school seeks to achieve future flexibility and adaptability differs. Some schools were designed to support schools-within-schools, "house" organizations, or teams of students and teachers. Other schools reflect a commitment to a more departmentalized arrangement of classrooms and specialized learning areas. Imbedded in these variations are apparent differences in the ways each school sought to create a professional work environment for staff.

Because the level of financial resources available to support design and construction differed, the high schools studied allocated more or less space to support specific educational components of the school, introduced different levels and types of technology, and selected varying types of equipment and furnishings. The pragmatic nature of these choices went beyond the realm of the aesthetic, introducing variations that each high school staff must seek to accommodate and use creatively.

Finally, at the time of this high school study, each high school was new or had only recently opened. Planning principals who had been responsible for contributing to school design efforts and monitoring construction activities were transferring their attention to creating a new school community inside an existing school district organization. In this context, staff development opportunities were being directed toward creating new curricula, exploring new staff working relationships, creating school governance and management understandings, and facilitating the development of new school and community traditions.

The diverse character, setting, and orientation of these six high schools should make them an attractive and valuable foundation for follow-up studies. Examples of the "key questions" that might serve to focus one or more follow-up studies include the following.

1. Since the time of the initial CEFPI study, what new "lessons" have been learned by those who have administrative or instructional responsibilities within each school?

    a. How has each school accommodated changes in enrollment growth and new interests in school organization, curriculum, or models of instruction?

    b. How effectively has the school's technology been used to support teaching and learning?

    c. What judgments have different "school-user groups" come to, with respect to the school's intended flexibility and adaptability?

d. If there were an opportunity to plan and construct another new high school within the school district, what would project planners do in the same way? What would they choose to do differently? Why?

e. In retrospect, what factors now appear most significant in helping to ensure the high school's successful introduction within the school district and surrounding community? What factors, if any, made a successful introduction more difficult? Why?

2. Of the six high schools studied, River Ridge High School emerged as the one school designed around an educational restructuring agenda formulated by project planners. A follow-up study of this school should be particularly useful in helping to assess the possible relationship between school design and desired educational outcomes. Key questions could include the following.

   a. With the design process focused on students and their learning, what impacts has the school had on student performance and achievement?

   b. How effectively has River Ridge High School made the transition from the original high school planning team to its present district and school leadership teams? What impacts have been experienced since opening?

   c. Planning work leading to the design of River Ridge High School extended over a period of more than three years. Viewed from a current perspective, how important has this planning work proven to be? How much of the original plan has been maintained? What has been revised or terminated? Why?

   d. River Ridge High School was "designed to a changing environment." How well has the high school accommodated the various changes that have taken place since the school's opening?

B. New Study Opportunities

The diverse backgrounds and interests of this region's CEFPI members should serve to encourage consideration of a variety of action research projects. An initial list of potential topics might include the following.

1. **Evolution of high school design.** At the time of this study, after a period in which few new high schools had been constructed, it appeared that there would be a number of new projects within the region. At the same time, work was underway in Washington, Oregon, and British Columbia to mount significant school-restructuring initiatives, targeted at both elementary and secondary education.

   With this pressure to revise the traditional curriculum and introduce new instructional delivery models, and regional population growth creating enrollment pressure, one would expect to see innovative high school designs emerge in many communities. A CEFPI study focusing on the evolution of high school design should emerge with important conclusions regarding such things as: changing relationships with the surrounding community; coping with rapidly changing technology; the effects of alternative approaches to school organization; meeting demands for flexibility and adaptability; and accommodating diverse learning and teaching styles.

2. **Elementary and middle school design.** Many of the factors that appear likely to compel high school design forward will affect schools at other grade levels as well. CEFPI members with an interest in elementary schools or middle schools may well benefit from a study focusing on the development of these school forms.

3. **School modernization.** The need to significantly improve existing elementary and secondary schools throughout the Pacific Northwest should provide a platform for several important study opportunities. Of particular interest may be modernization work done on older, traditional schools and the preservation of historically valuable school buildings.

4. **School construction.** This particular study did not focus directly on the actual construction of the six high schools studied. Clearly, however,

the process and methods associated with actual school construction are vitally important and deserve in-depth study.

5. **Advancements in the uses of technology.** At the time of this high school study, representatives of each school described their school technology as "state of the art." They also clearly understood the rapidly changing nature of technology and the potential for its broader use to facilitate teaching and learning.

   During the Beaverton visitation, one school district representative stated, "Innovation in the technology industry will continue. We need to deal with it and figure out how to take full advantage of new things. Multi-point conferencing, video, voice recognition: in five years, these will be as ubiquitous as PCs."

   Studies of recently constructed or modernized schools should point to advancements in the uses of technology within schools. The lessons learned from diverse initiatives should prove valuable to CEFPI members and to others associated with the region's schools.

6. **Safe and secure school environments.** Few themes emerge in school design meetings with as much intensity as the concern about creating safe and secure school environments. A CEFPI study focusing on this theme should provide clues to advancements in school siting strategies, design considerations, and technology applications.

7. **Specialized Schools.** Growing interest in options programs and alternative education has spawned the construction of relatively small, specialized schools designed to support distinctive educational visions. These schools typically differ significantly from comprehensive schools, offering unique curricula, emphasizing different teaching strategies, and employing technology to transcend physical location. A CEFPI study of these specialized schools should offer an opportunity to explore "cutting edge" facility design issues that have implications for more traditional schools.

VI. SOME FINAL OBSERVATIONS

At the conclusion of each high school visitation, CEFPI team members gathered for half a day, or more, to debrief what they had heard and seen. These discussions - reflective, thoughtful, insightful, provocative, and sometimes quite funny - were themselves as instructive as any other part of this endeavor. Because they brought together people who shared an involvement in school construction projects, but who were accustomed to viewing it through their particular professional lenses - architect, facility planner, or school administrator - these debriefing conversations generated a richness of dialog that is impossible to capture fully.

In the interest of shedding further light on the "joys and frustrations, the satisfactions and anxieties" alluded to in the introduction to this report, and to represent the depth and range of the contributions of the men and women who volunteered their time to visit the six study sites, a selection of their comments is presented below. They do not appear in any particular order, and they have been removed from their site contexts. They are presented here simply to do what they did when they were first offered in conversation: provoke thought.

- A building is only a building. It's the people in it that make it sing. The people inside create the potential for real magic. Growing the staff is as critical to a successful opening as the process of designing and constructing the school.

- Everybody I talked to had their own definition of success, like "as long as it's not in the newspaper" or "as long as it meets the needs of a particular central office administrator." There are a whole lot of "stovepipes of success."

- I've learned never to go to the superintendent or the board and make an educational decision based on a facilities problem. If the principal isn't part of the decision, I won't go.

- Someone calls and asks for a cost estimate within an hour. It's ironic, spending a day and a half to calculate the cost of one inservice day and spending an hour to calculate the cost of a new high school.

- The certainty of need for a new school is eroded by our own inventions, like year-round school, extended days, and alternative learning options. Without intending to, we are increasing the feeling that there are alternatives to construction and raising complex questions about capacity.

- The people we met didn't run to the front door because there's something wrong with the entry. They ran to the door because they're *proud*.

- Architecture can't be momentary. I hope we can drive by this school in ten years and say, "That's a good building."

- Each time we've added staff, we've had to revisit our vision. When people don't understand the vision, they get frustrated very quickly.

- If you're just going to build a building that replicates what you're already doing, then the involvement of staff and community may not be very important.

- I believe that what we're seeing now are efforts to try and create high schools that will look and feel more like a middle school, and middle schools that are more like an elementary school, and elementary schools that look more like home.

- It appears that if school space isn't specialized, it will get taken over by the most forceful people in the building. Specify it, or it ends up as storage.

- This experience confirms the need to create stages that people can walk out on and share their thoughts and feelings. The lessons learned in any process are important to visitors. They are even more important for those inside. Planning is planning is planning, and corrections made in one planning process can benefit all other district planning processes.

- They did a really good job with a really bad budget.

- The large, traditional, departmentalized high school has not worked for a large number of kids. We have to accept that premise. What I see here are people willing to take the risk. Until somebody does that, we'll never be any different that we are.

- It appears that if you encourage people to dream and do not create some parameters, the differences that emerge between the dreams and the realities will become lasting disappointments.

- We have to find some way to contract our school construction timeline and to effectively reduce the time that transpires from thinking about a new high school to actually completing construction and opening the new school.

- There is a key question here: who is the expert when you define a space for instruction?

- It appears that when you divide educational specifications development from the involvement of the design architects, you lose some important conceptual understanding.

- One of the ironies is that despite its limitations, the school's technology has become associated with what's innovative and successful. In reality, other areas of the school are much more innovative and successful. How do failures get to be seen as successes? How do successes come to be viewed as failures?

- Some staff members were ripping the design. When we asked how many [had] wanted to participate in the design, they all said yes. When asked how many felt they did, very few answered yes. When asked how many of you like your space, they all answered yes. And when we asked how many liked the building in general, they all answered yes. They liked the school, but resented how it came into being.

- So much has to do with human relationships, whatever the physical spaces are. The buildings are important, but people can make up for a lot of deficiencies. Good teachers can find a way to make any space work, from a good room to the back of a pickup truck.

- Planning and constructing a new high school should be a very exciting time, and if it isn't, you're missing out. It should be forward-looking and futuristic, but school districts get into routines. A new school disrupts that routine.

- It looks like it was just luck, but I have seen people pull off things that outsiders thought were luck, when in fact they were very thoughtful. Some luck may be involved, but this isn't a product of luck. It's a product of skillful leadership that produced things that looked like luck.

APPENDICES

HIGH SCHOOLS SELECTED FOR CEFPI VISITATIONS

Appendix A: Westview High School Documents

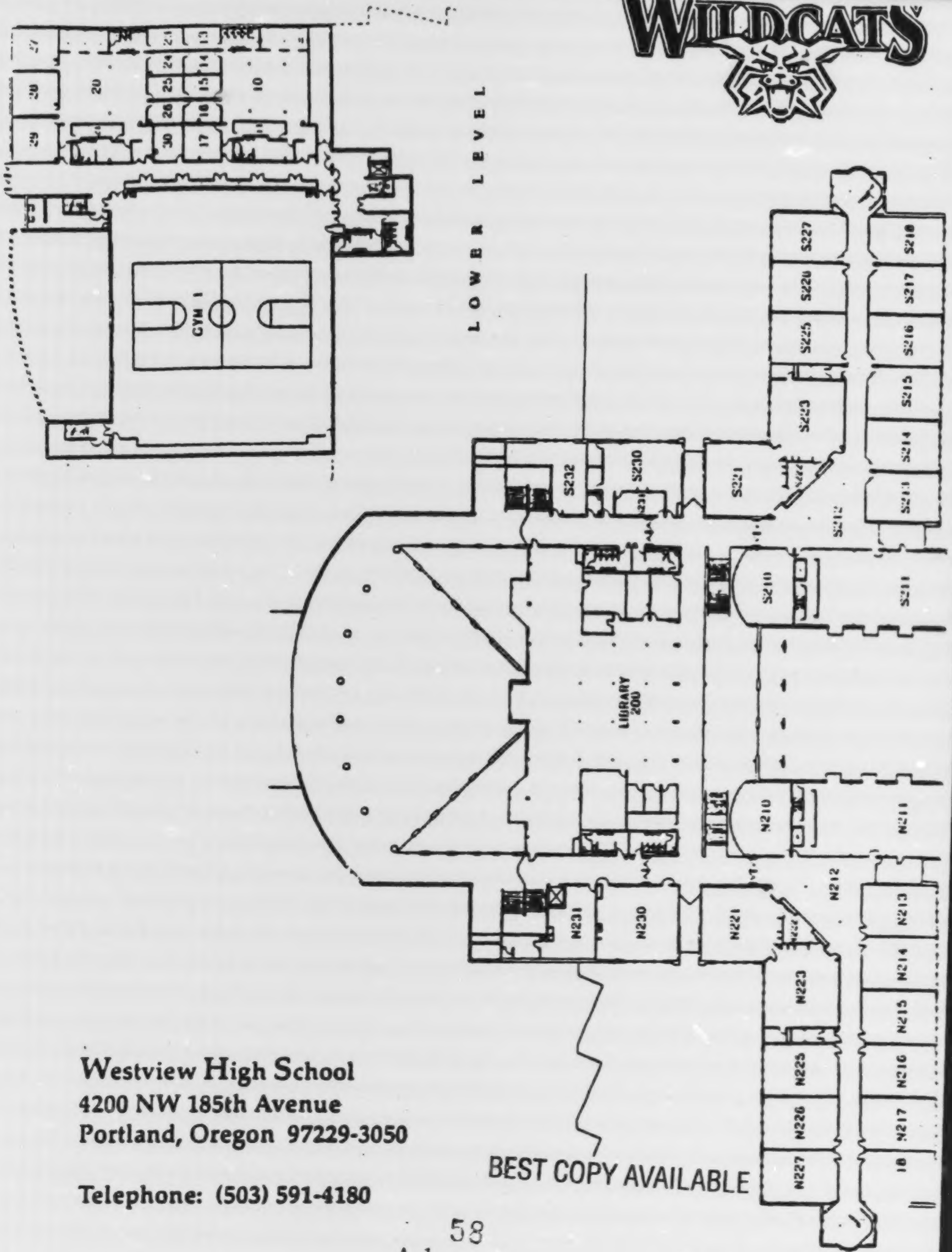
Westview High School

Beaverton School District, Oregon

Visitation Team Members

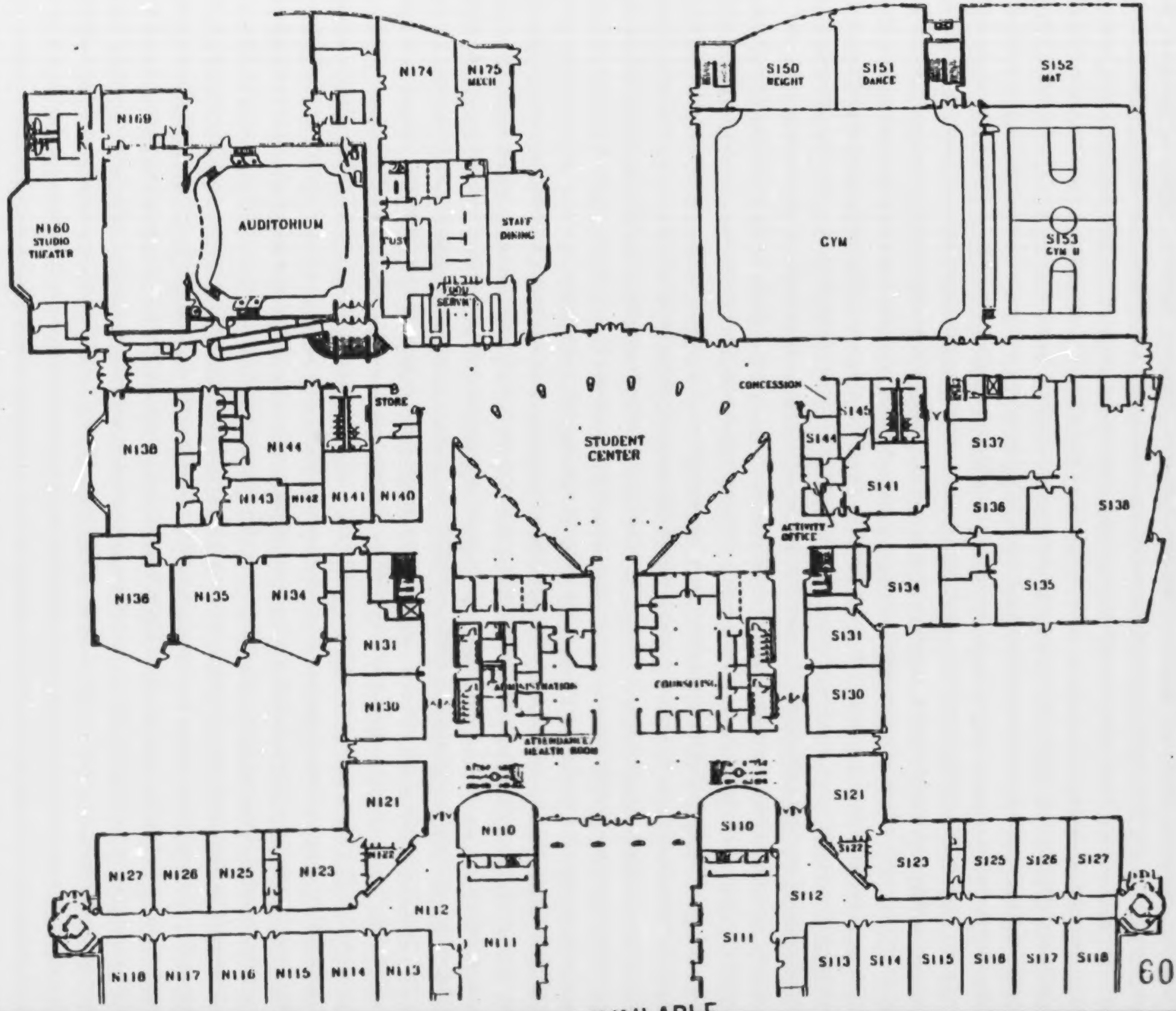
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland
Architect Chas Chisom, CMB Architecture & Planning, Seattle
Principal Kathy Siddoway, Lake Washington School District, Washington
Director of New Construction Mike Currie, Issaquah School District, Washington
Director of Plant and Facilities Glen Anderson, Kent School District, Washington

WILDCATS



Westview High School
4200 NW 185th Avenue
Portland, Oregon 97229-3050

Telephone: (503) 591-4180


N169
N174
N175
MECH
S150
WEIGHT
S151
DANCE
S152
MAT
N160
STUDIO
THEATER
AUDITORIUM
STAFF
DINING
GYM
S153
GYM II
STORE
CONCESSION
S145
STUDENT
CENTER
N138
N144
S144
S137
N143
N142
N141
N140
S141
S136
S138
ACTIVITY
OFFICE
N136
N135
N134
S134
S135
N131
S131
ADMINISTRATION
COUNSELING
N130
S130
ATTENDANCE/
HEALTH ROOM
N121
S121
N110
S110
N127
N126
N125
N123
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A-2

VALUES

The Educational Specifications Committee, through large and small group discussions, identified a set of values the new high school should embody. These values resulted after consolidating a number of issues, thoughts and desires expressed by the Committee. The Educational Specifications Committee identified the following as singularly important to the New High School, listed below in order of priority.

1. Character
2. Curriculum/Programs/Reconfiguration
3. Flexibility
4. Integration with Community
5. Integration of Technology
6. Safety and Security
7. Personalization

VALUES: Character

The form, design, shape, articulation and expression of the High School is referred to as "Character." This value encompasses and gives meaning to all others.

The Character of the new High School shall reflect in a traditional sense the school's mission and place in the community. It shall express itself positively, energetically and with strength. Its place in the community as an institution of importance should not be diminished. Its articulation and form should be expressive of its mission. Its base of reference shall be grounded in history and building type. Its feel should optimistically speak to the future. The school should strongly establish a sense of place and inspire.

Objectives:
- Tradition of education expressed.
- Significance of parts and whole articulated.
- Recognize that the school will be different.
- Provide central focus.
- Insure specialness of place.
- Shape to form meaningful interior and exterior spaces.
- Light and open.
- Hierarchy of experience.
- Accommodate the individual.
- Progression of spaces.
- Identify and enhance places of importance.
- Accommodate multi-disciplinary activities.

VALUES: Flexibility

The ability to accommodate and provide for a multitude of different activities, programs and philosophies both known and envisioned is referred to as Flexibility. The desire is to configure the high school in such a manner as to accommodate these objectives in a supportive way rather than primary way. The value of flexibility is utilitarian in nature, and should be executed pragmatically.

Objectives:
Flexible instruction areas.
Flexible use by the community.
Efficient use of space.
Maximum contingency planning.
Create an environment to accommodate change.
Flexible room structure (movable walls).
Multiple opportunities to integrate technology.

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VALUES: Curriculum/Program/Reconfiguration

It is felt that the school should provide for the needs of all students. The school should recognize that the school year will be expanded and that a multi-disciplinary and integrated educational and activity program should be development to address the individual, as well as group needs of the student.

The high school should address both the educational and societal needs of the student. This effort should be supportive, challenging, rewarding and comprehensive.

Objectives: The high school shall contribute to a comprehensive school district with the specialized possibilities.
Multi-cultural/economic diversity.
Equitable but unique.
Interactive and interdisciplinary.
Supportive for students with limited physical or mental ability.
Incorporation of community social service activities.
Expanded operating hours.
One hundred percent participatory activities.
Integration/interdisciplinary.
Provide for basic and effective needs.
Recognize accomplishments of all.
Supportive quality for the integration of ninth grade.

VALUES: Integration With Community

Traditionally, the High School was the center of the student's educational focus. It was the educational springboard from which students would prepare to enter society as adults.

It is viewed that the High School has evolved into a community center for the student and community; an embodiment of the best ideals of the community in which the school resides.

Its mission should be to engage institutions, businesses, groups and individuals throughout the community in meaningful and positive ways to form a focus and center for not only the students but community at large.

Objectives:
Symbolic center of the community.
Link with community agencies.
Welcome all cultures and ages.
Expand educational role.
Expand societal role.
Provide increased health services.
Community use of facilities.

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VALUES: Integration Of Technology

In order to incorporate and broaden the base of tools available to educate and inspire, the new high school should provide a framework and infrastructure to allow for the quality integration of technology. Technology includes not only those systems on an educational level but systems on an environmental level, and care should be exercised in their integration and interrelationships.

Objectives:
- Incorporate interactive technology.
- Provide for increased communication.
- Recognize that technology will change.
- Ability to accommodate multiple technological options.
- Integrate in a meaningful way.
- Expand use of technology beyond school building.
- Incorporate environmental support systems.
- Encourage the proper integration of mechanical/electrical/plumbing and structural systems.

VALUES: Safety And Security

A high school that is safe and secure and creates a sense of belonging is identified as a significant value. It is a value that emerged as a response to changes in society and the desire to create a constructive environment in which to learn and interact.

Objectives:
- Emotionally/psychologically secure.
- Safe and friendly atmosphere.
- Recognition of urban issues emerging in suburbs.
- Increased communication.
- Recognition that safety is the responsibility of all.
- Commitment to "ownership."
- Safe circulation/traffic.

VALUES: Personalization

Accepting that large multi-disciplinary high schools are necessary, increased personalization and reduced anonymity is embraced as a value to reinforce the importance of the individual within the larger high school environment.

Objectives:
Personalization as a way to reduce mass.
Individual "is" important.
Sense of identification with the school.
Encourage student interaction.
Individual "is" accountable.
Establish culture/tradition of new school.
Encourage student "use" of school.
Develop sense of community.
Develop places for socialization/interaction.
Establish interrelationship with community.
Develop non-academic "harbors."
Encourage parent interaction.
Develop sense of ownership.
Promote inclusively.
Encourage responsibility.
Encourage interaction between departments.
Develop "we" attitude.
Increased interaction between staff.

GOALS

In support of the Mission, Values and Scope/Parameters, goals for the new school were developed by the Educational Specifications Committee concerning:

- Students
- Staff
- Community
- Interrelationship with District
- Teaching/Learning

GOALS: Students

Graduates of Beaverton's schools will possess skills that will serve them well as lifelong learners, competent members of a well-qualified work force, and citizens participating in a democratic society. Programs, activities and services offered within the new high school should enable each student to achieve these educational outcomes.

Goals include:

- Offer coursework, activities and educational services that will assist each student to succeed in school.
- Help students to successfully enter high school following their matriculation from middle school.
- Create a positive learning environment that is appropriate for a diverse student body.
- Provide educational options that support differing student's developmental needs, learning styles and pace.
- Encourage flexible student grouping, individualization and interdisciplinary instruction.
- Ensure barrier-free access to all school facilities.
- Utilize appropriate instructional technologies to enhance student learning opportunities.
- Encourage students to be activists in the community (i.e., volunteers).

GOALS: *Staff*

A well-prepared and effectively supported staff is an essential element within any outstanding school. The new high school's design should contribute to teaching and learning, help to strengthen staff relationships, and offer the means for improving professional and occupational abilities and personal well-being.

Goals include:

- Provide staff with a professional work environment.
- Support inter-department cooperation, collegiality and effective communication.
- Provide the equipment, materials and technologies needed to ensure effective instruction.
- Offer flexible instructional space to accommodate differing classroom needs, teaching methods and student/staff groupings.
- Facilitate the participation of staff in school decision-making and individual professional development.
- Encourage parent and community participation in each student's education.

GOALS: Community

The new high school should be designed and maintained in a way that will enable strong and valued relationships to form between the community and the school. These relationships will contribute to the quality of education available to all students and to the richness of the school's educational programs and activities.

Goals include:

- Provide opportunities for extensive community use of school facilities.
- Encourage significant business-school partnerships.
- Link community-based organizational and agency services with student needs and interests.
- Facilitate opportunities for students to engage in meaningful learning activities throughout the community.
- Contribute to the character of the community.
- Become a source of community appreciation and pride.

GOALS: Interrelationship With District

All Beaverton schools share a responsibility to the attainment of the mission, philosophy and goals for the Beaverton School District.

Goals include:

- Develop and maintain cooperative working relationships with other Beaverton schools.
- Offer programs, activities and services to students in a manner that is consistent with the District's mission, philosophy and goals.
- Provide educational options for students in accordance with district-wide plan.
- Contribute to the feeling of pride and ownership that parents and other community members have for the Beaverton schools.
- Properly maintain the school building, equipment and grounds.

GOALS: Teaching/Learning

The central focus of the new high school is highlighted by the process and outcomes of teaching and learning. The new school's design should contribute to each faculty member's ability, and collaboratively engage students in meaningful educational opportunities.

Goals include:

- Provide adequate school space to enable diverse educational programs and activities to be offered to students.
- Create and maintain a safe and secure learning environment.
- Encourage the development of a "learning community" that incorporates all members of the school's staff and student body.
- Provide access to teaching materials and learning resources needed to support educational programs and activities.
- Facilitate the personalization of teaching and learning.
- Contribute to the proper supervision of students.
- Assist all students to achieve success in school and to graduate in a timely manner.

Appendix B: Kamiak High School Documents

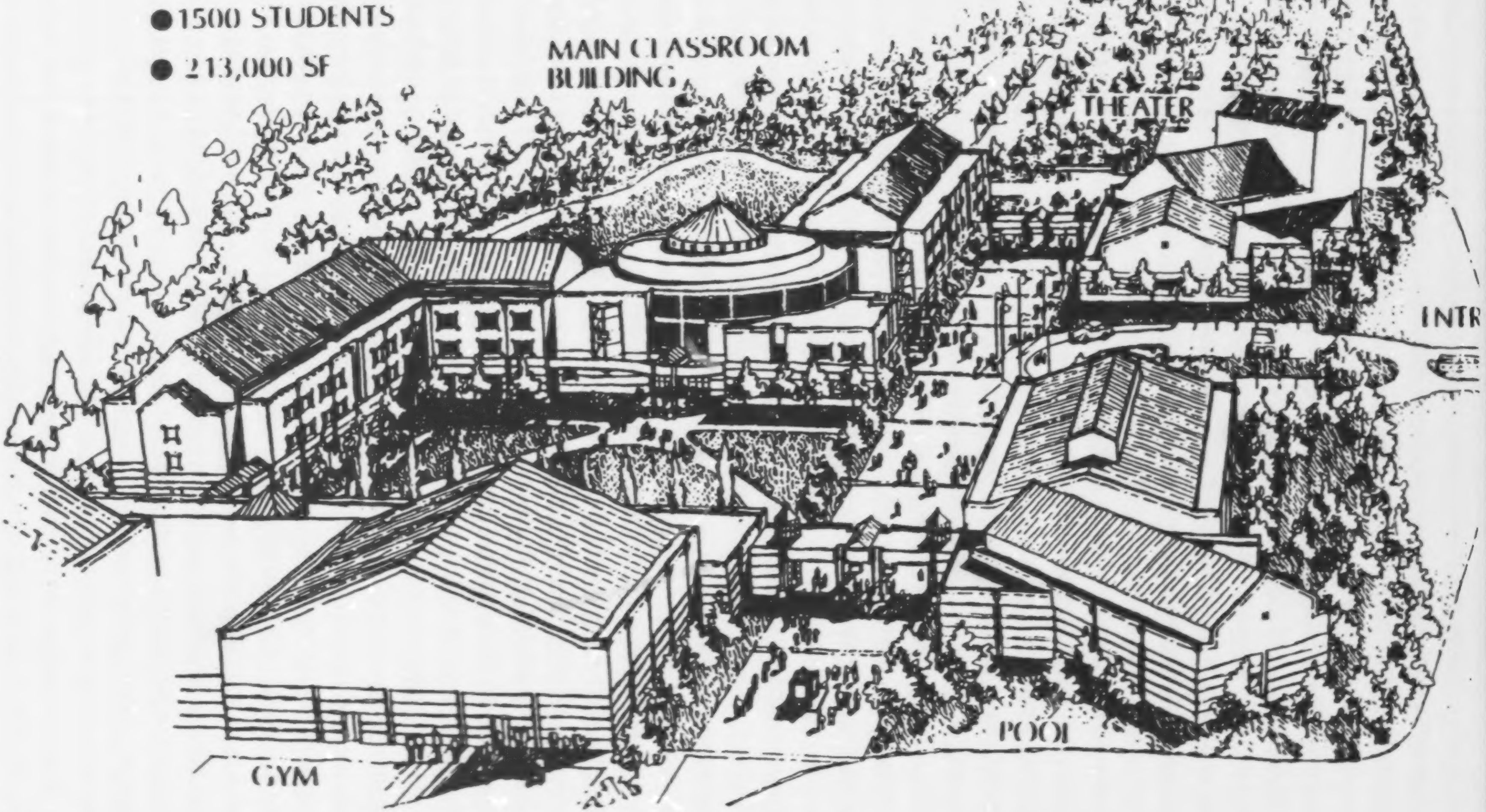
Kamiak High School

Mukilteo School District, Washington

Visitation Team Members
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland
Architect Gordon Graham, Chilliwack, British Columbia
Architect Chas Chisom, CMB Architecture & Planning, Seattle
Director of Facilities Bob Stewart, Gladstone School District, Oregon
School Administrator (retired) Chuck Taylor, Shoreline School District, Washington
District Facilities Planner Hugh Skinner, Surrey School District, British Columbia

KAMIAK HIGH SCHOOL

- 55 ACRE SITE
- 1500 STUDENTS
- 213,000 SF



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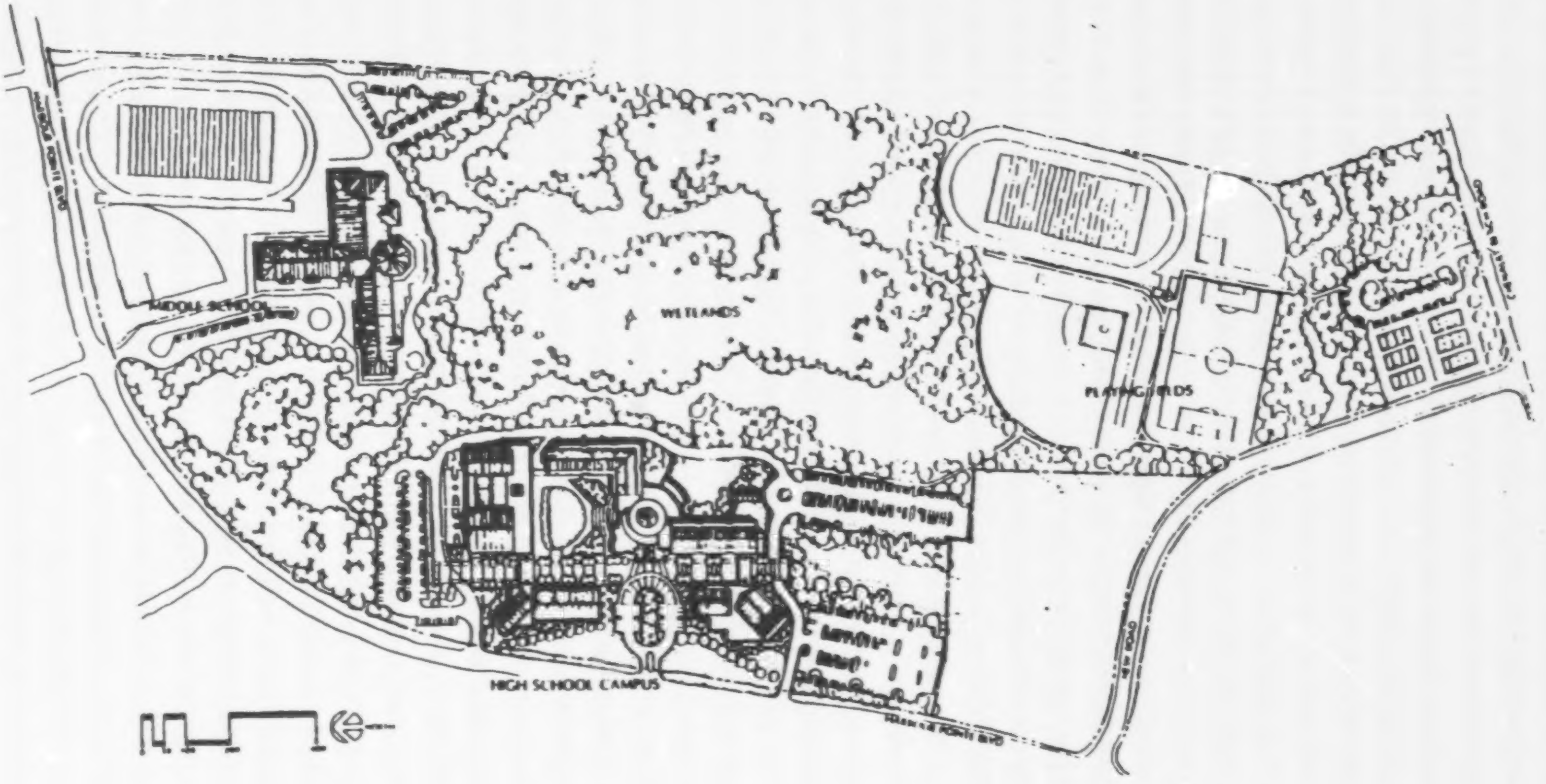
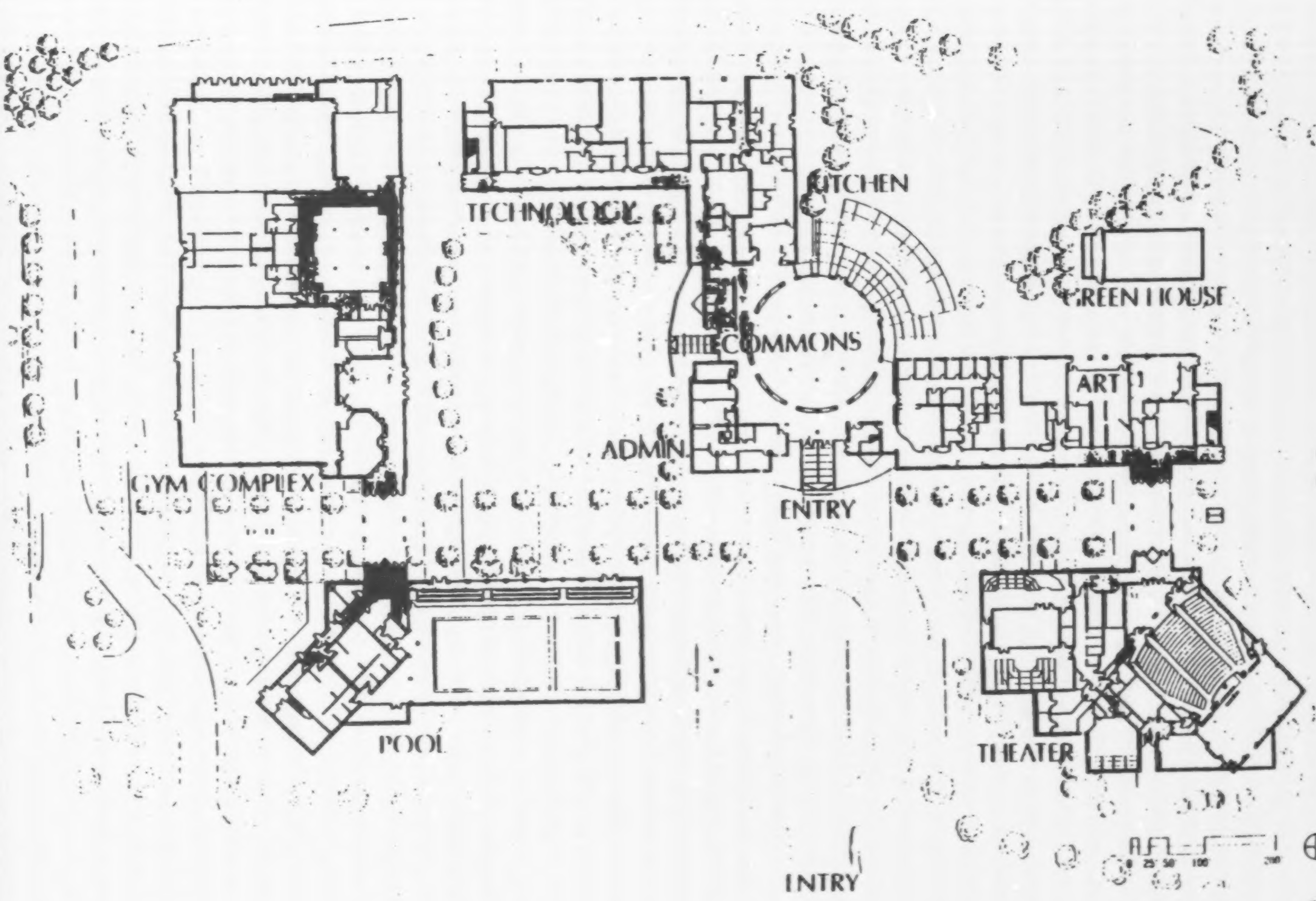
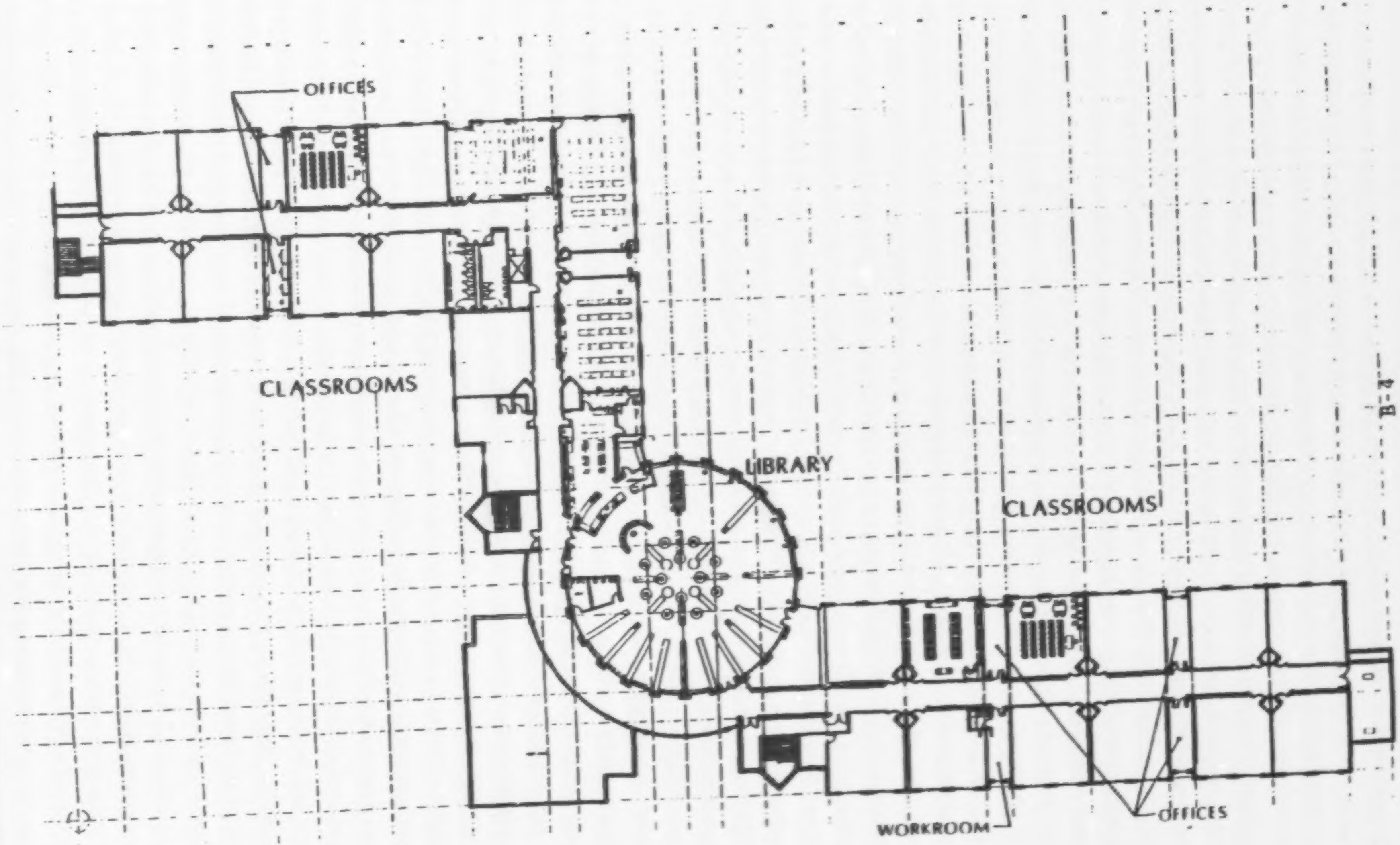
AERIAL VIEW OF CAMPUS


MIDDLE SCHOOL
WETLANDS
PLAYING FIELDS
HIGH SCHOOL CAMPUS
NEW ROAD

SITE PLAN



FIRST FLOOR PLAN



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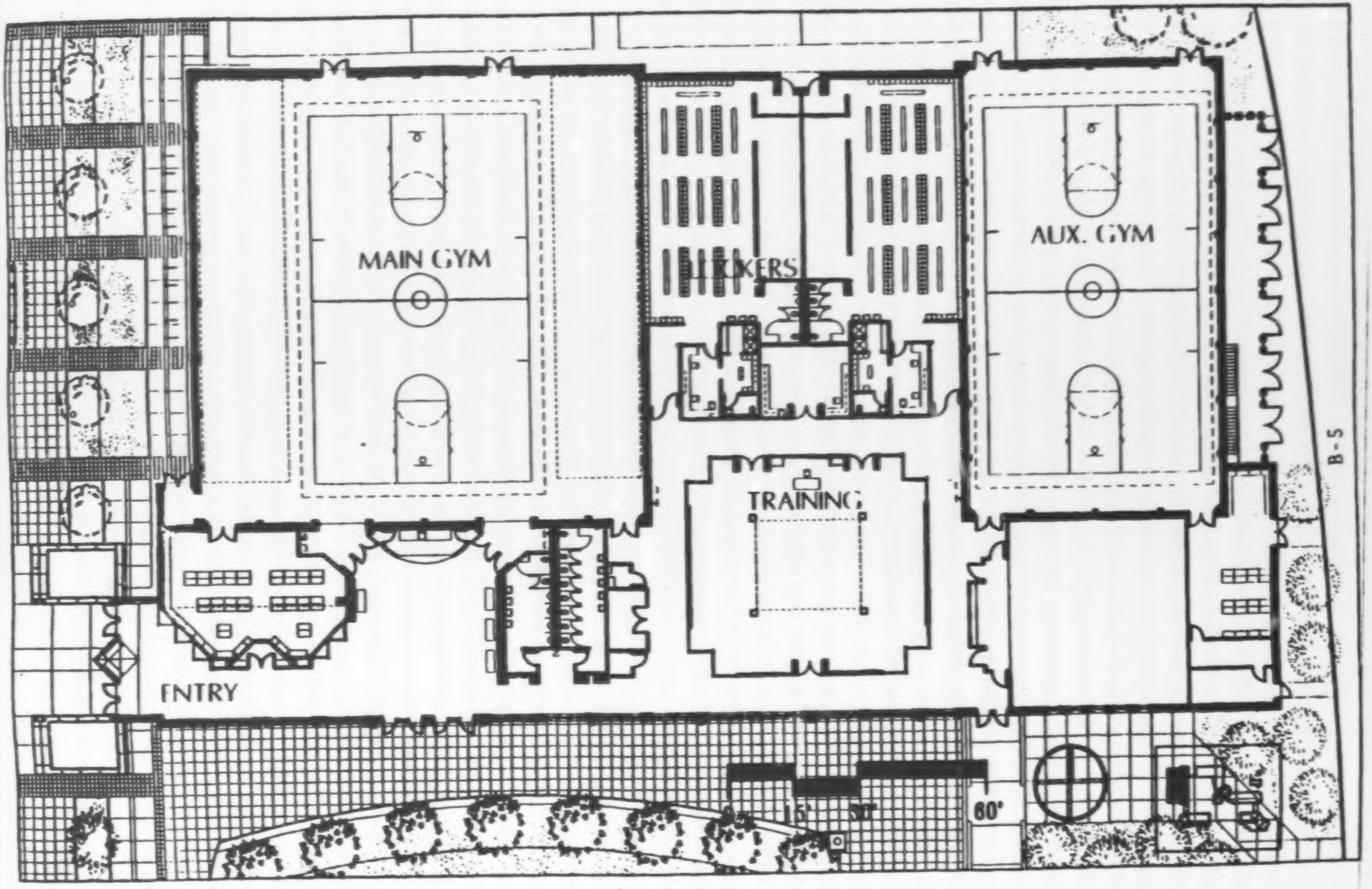
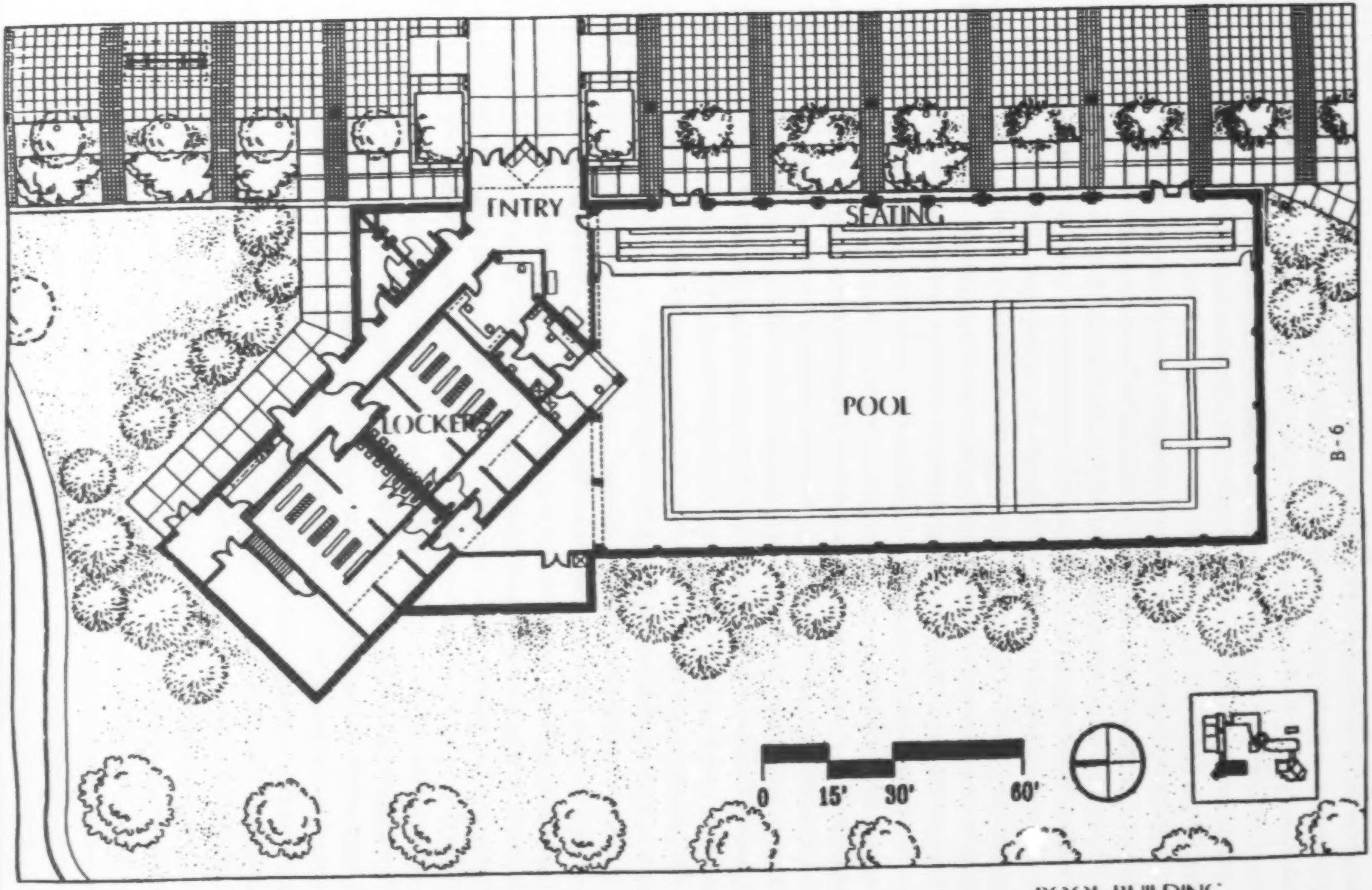
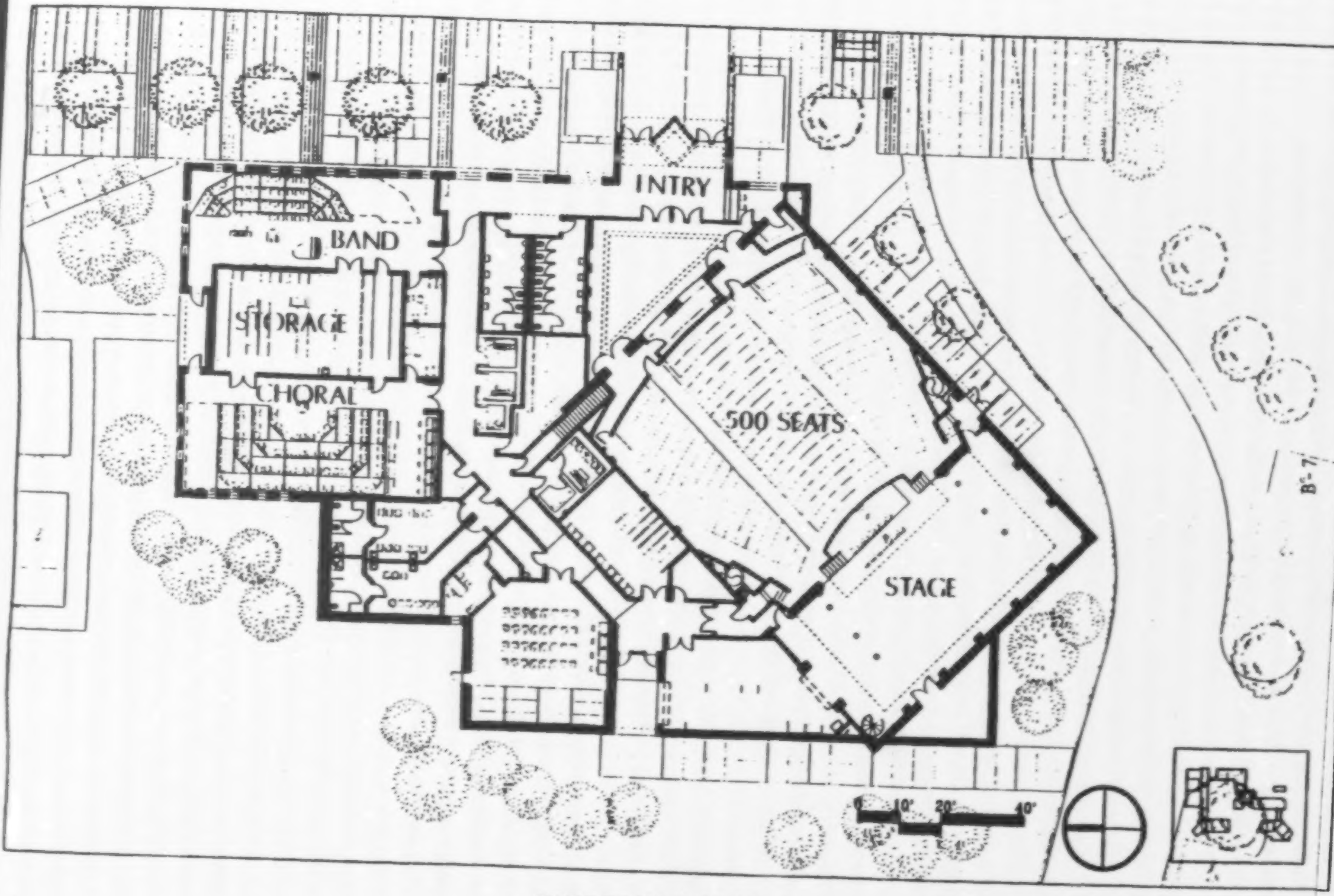
2ND FLOOR PLAN



GYM COMPLEX



POOL BUILDING



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PERFORMING ARTS

KAMIAK HIGH SCHOOL

OVERALL PLANNING CONSIDERATIONS

The following general guidelines should be considered in the planning and design of the Kamiak High School.

BUILDING IMAGE

Establishing a strong building image is important to this project. Recommendations are well defined within the citizen, student, and management team minutes located later in this report. Several aspects of building image are defined below:

1. Reflect local culture
2. Create professional appearance
3. Create distinctive and very well defined building entrance for daytime and evening use.

OVERALL CAMPUS PLANNING

General campus planning issues are summarized below:

SITE INGRESS AND EGRESS:

1. Separate bus loading, parent pickup, teacher parking areas, and student parking
2. Separate staff and visitor parking
3. Create well defined and well lighted community access routes
4. Staff parking: 150 spaces (jointly planned with the new middle school)
5. Visitor parking: 10 spaces
6. Student parking: 450 spaces
7. Parking Lot: 3 foot high concrete piles around light fixtures for protection

BUILDING-WIDE TRAFFIC PATTERNS:

1. No locker bays!. Distribute lockers near classrooms.
2. Provide a well defined student entrance from bus areas
3. Recess, stagger, and offset classroom doorway entrances
4. Drinking fountains: Recess throughout building

KAMIAK HIGH SCHOOL

PRE-PLANNING ASSUMPTIONS

1. The program and the campus will reflect a comprehensive school - not a magnet school.
2. It will be planned to encourage the use of appropriate instructional technologies necessary to equip young people for participation in the 21st Century.
3. The District-wide stadium will be provided at Mariner High School.
4. The District-wide performing arts facility (for community use) will be provided at Kamiak High School.
5. A competitive swimming pool will be provided at Kamiak High School, including an adequate spectator area.
6. Educational specifications for Kamiak High School will be used as a basis for evaluation and planning of renovations at the existing Mariner High School in a fashion to promote equal educational opportunity as much as possible within existing physical, structural, and budgetary constraints.
7. Building flexibility must be planned carefully to adapt to an ever changing instructional program.
8. Community use - by all citizens, must be encouraged. "Quality of life" and aesthetics should play an important role in defining a more sensitive learning and work environment.
9. The instructional program and the facility itself must reflect a "student center" environment.
10. Planning should recognize join site use with a middle school in a fashion which reflects separate programs with the opportunity for shared facilities.

5. Provide covered walkways between all campus buildings. Covered walkways should be adequate in width to protect from inclement weather and buffer from prevailing wind.

6. Pedestrian routes should avoid travel through parking lots and vehicle traffic areas. Avoid traveling through bus loading to access parent pickup area.

7. All building entrances should lead to major activity zones such as multi-purpose, dining, technology, media center should be well defined.

8. Display areas should be established in the foyer and other appropriate locations within the hallways.

9. The existing service entrance should be buffered to reduce visual and sound disruption of adjacent classrooms. New construction should be sensitive to this unfortunate existing location.

10. Elevators: Adequate doorway width for pallet deliveries and 4,000-5,000 load capacity for supply deliveries.

11. Avoid remotely located exiting stairwells that become high vandalism areas.

12. Outside door entrances should be partially covered with mats outdoors. Inside of door should be floor vinyl with mat. This reduces dirt transfer into the building

13. Door Closures: Heavy duty exterior door closures to avoid vandalism

14. The entrance is critical to building design – from the outside as well as the inside. The entrance should:

    - Be very well defined and observable to the first time visitor.
    - Be well lighted at night for evening use.
    - Upon entrance – create the "ahhhhhhhhhh!" effect of excitement
    - Provide transition from the outdoors to the commons area.
    - Provide clear and direct accessibility to administration.
    - Set the image and attitude of the building.
    - Display trophy cases in entrance.

15. Administration and guidance should be *clearly separate* but work together. These functions should:

    - Have their own sense of entrance
    - Share one conference room
    - Have the administrative entrance facing toward the building entrance and guidance toward the commons.

16. The media center is frequently called the "hub of the school". This is a slight misnomer. We believe it should be the center of the "academic hub" of the school.

The **entrance** to the media center is what defines its relationship to the rest of the building. The entrance should be part of the academic area. The media center should:

- Orientate and be primarily accessed from the academic area.
- Be perceived as having two elements -- the academic student area and the support administrative functions.
- Allow the production work room and support space to be utilized by teacher planning and the rest of the building.
- Have a strong sense of entrance.

17. Noisy areas are usually segregated away from academic programs. These areas include:

- Industrial arts
- Music
- Dining/commons
- Gymnasium

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Appendix C: Lord Tweedsmuir Secondary School Documents

Lord Tweedsmuir Secondary School

Surrey School District, British Columbia

Visitation Team Members
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland
Architect Chas Chisom, CMB Architecture & Planning, Seattle
Architect John Weekes, Dull Olson Weekes Architects, Portland
Director of New Construction Mike Currie, Issaquah School District
Deputy Superintendent Stan Miller, Hillsboro School District, Oregon
Architect John Mahlum, Mahlum Nordfors McKinley Gordon Architects, Seattle
Architect David Frum, Meng Architects, Seattle
Director of Plant and Facilities Glen Anderson, Kent School District, Washington
Assistant Superintendent Sue Shannon, Educational Service District 113, Washington
Assistant Superintendent Steve Ladd, Beaverton School District, Oregon

LORD TWEEDSMUIR SECONDARY SCHOOL

School District No. 36, Surrey, B.C.

Architects:		G.R. Graham, Architect
Engineers:		Pomeroy Engineering Ltd. - Structural / Civil D.W. Thomson Consultants Ltd. - Mechanical Pacific Rim Consultants Ltd. - Electrical Barron, Kennedy Lyzun - Acoustical
Area:	Gross Functional:	155,268 sq. ft. (14,425 sq. m.)
	Attic Fan Rooms:	13,700 sq. ft. (1,273 sq. m.)
	Total:	168,968 sq. ft. (15,698 sq. m.)
Cost:	Demolition and Site Work:	$ 2,062,089.00
	Building Construction:	$ 19,278,209.00
		$ 21,340,298.00
	Equipment (Budget):	$ 1,900,000.00
	Fees and Disbursements:	$ 1,942,046.00
		$ 25,182,344.00 (Canadian)
Construction Start Date:		March, 1992
Completion Date:		August, 1994

The Lord Tweedsmuir Secondary School project was initiated by the Surrey School District to replace an older senior secondary school in Cloverdale which presented an unacceptable seismic risk, and to amalgamate the senior school with an existing junior secondary school in the same community, to form a secondary school with a nominal capacity of 1,350 pupils, and seven Special Education modules, servicing grades 8 through 12.

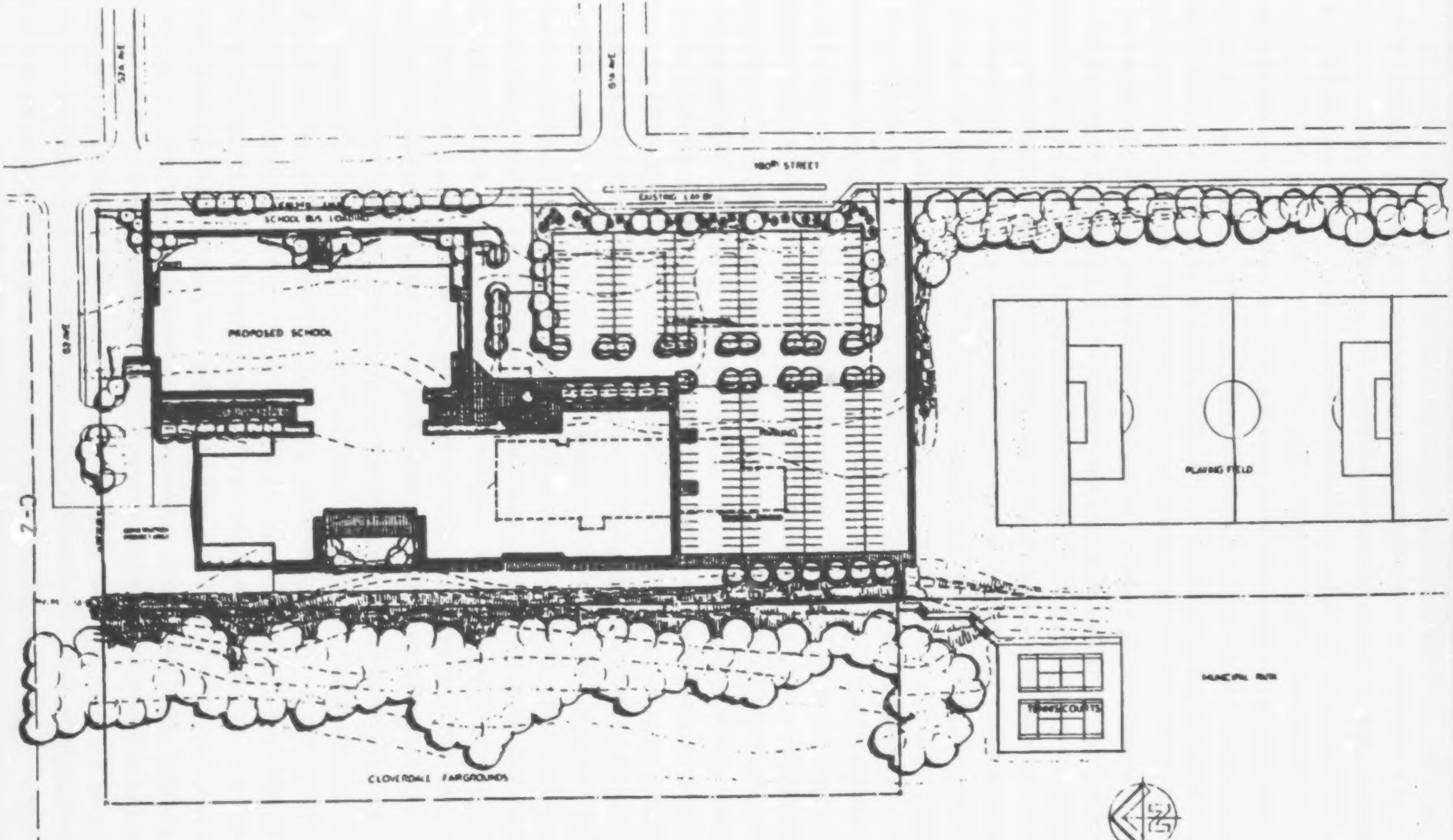
Both school sites were assessed and the existing senior school site was selected as the location for the new facility, due to its accessibility and its location adjacent to a municipal park/recreation complex which included a community swimming pool, ice arena, curling club, horse race track, and rodeo arena. The selected site was rectangular in shape, relatively small, and located on a hillside, with a slope across its width of approximately forty feet. The existing site included an excellent playing field which was to be retained in the final development, and a school building accommodating 600 pupils which was to be kept in operation during the implementation of the construction programme.

The community of Cloverdale had adopted a plan for redevelopment of its "core" area, adjacent to the park/recreation complex, which encouraged a "heritage" theme for new construction. The School District expressed their desire to the architects that the proposed school design be sympathetic to this community objective. A concept of composing the building of several distinct elements rendered in traditional materials and design elements connected with lighter, glazed "links" was selected to accomplish this goal.

The building design and construction process commenced in September of 1990 following the confirmation of the building site, the educational programme, and the project schedule. Conceptual design studies were completed in February of 1991 and approved by the School Board at the end of March 1991. Detailed design development and consultation with school staff and parent/community representatives continued through the spring and early summer of 1991. The preparation of construction and tender documents was completed by December 1991 and the construction contract was awarded at the end of February 1992.

Phase One of the the construction programme included the construction of approximately 80% of the new school plant on the parking lot of the existing school. This phase of the work included all the school facilities except the gymnasium, music, and drama facilities. During this phase, staff and student parking were accommodated on a temporary parking lot constructed on municipal property adjacent to the school site. In August of 1993, this portion of the work was completed, and the senior secondary pupils from grades 11 and 12 moved into the new facility.

Phase Two of the project commenced immediately after the occupation of Phase One with the demolition of the existing school building, excepting the existing gymnasium and music facility, which were kept in operation. The new gymnasium, music and drama rooms were then built on space previously occupied by the school's industrial education wing. The physical education and music programmes were moved to the new facilities in April of 1994 and the remaining portions of the old school were demolished. Completion of the site work, including the construction of the new permanent parking facilities, proceeded through the summer until August of 1994, in time for the start of the 1994-1995 school year. At that time grade 8 to 10 students, from Cloverdale Junior Secondary School, were moved into the new facility to complete the project.



SITE PLAN

LORD TWEEDSMUIR SECONDARY SCHOOL

SCHOOL DISTRICT NO. 36 SURREY, B.C.

G.R. Graham
architect
1

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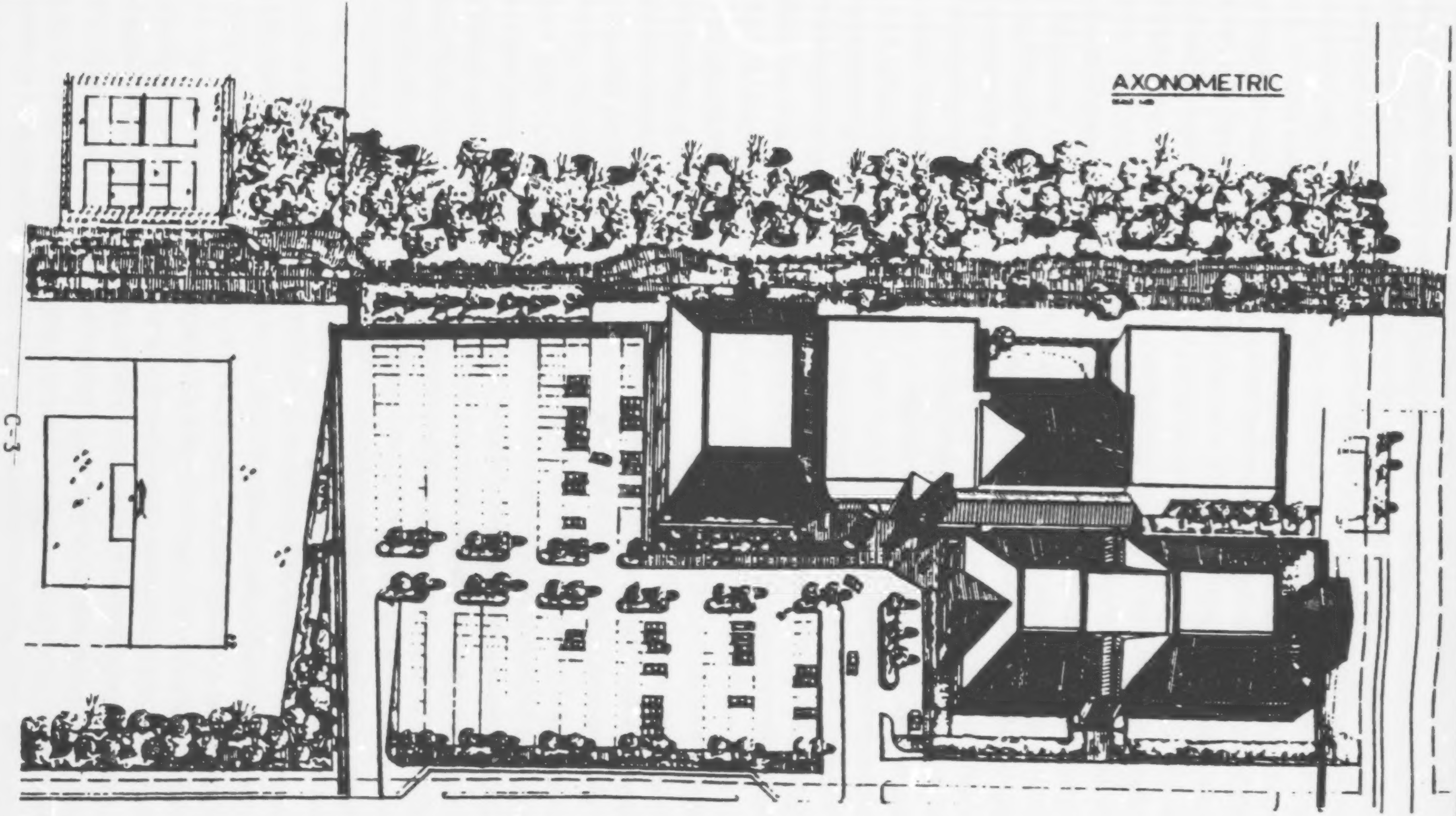

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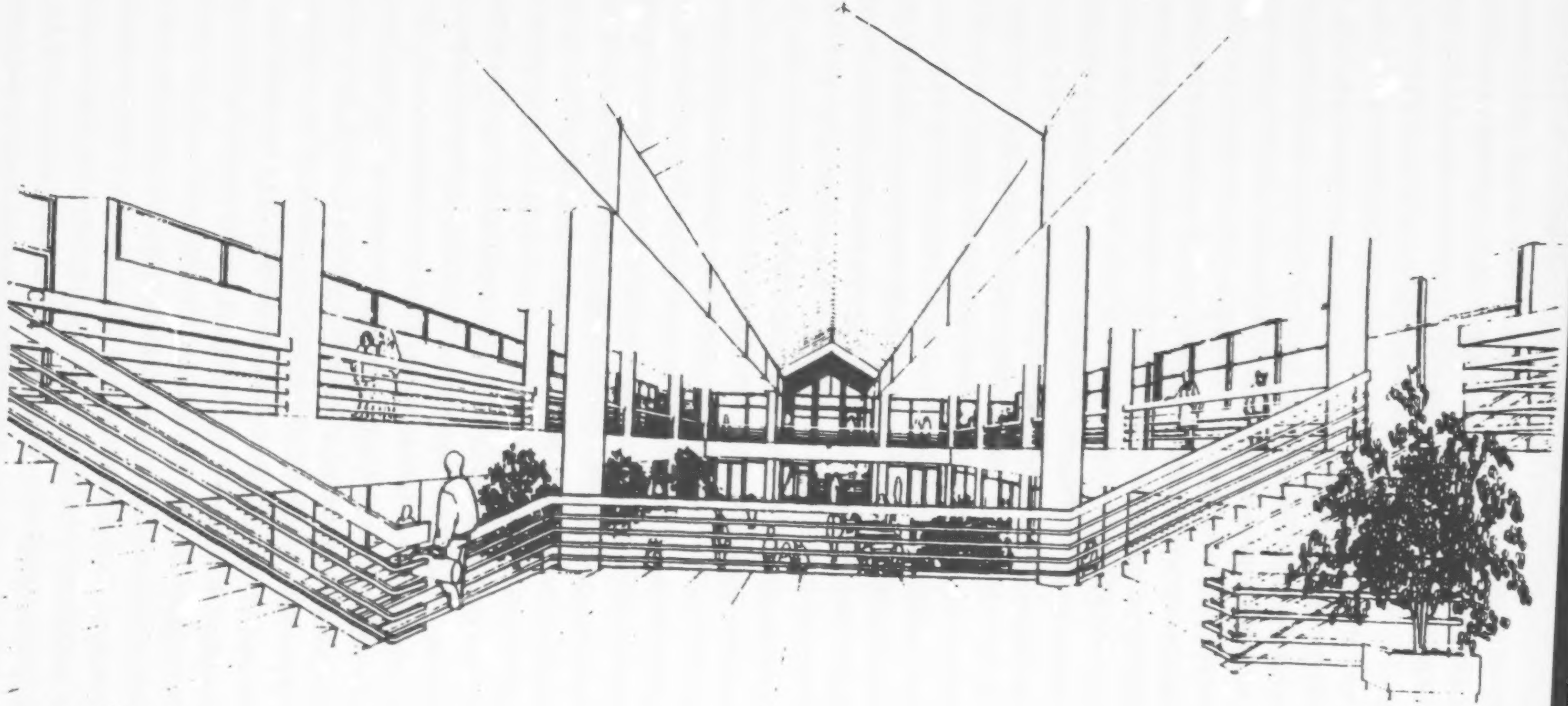
LORD TWEEDSMUIR SECONDARY SCHOOL

SCHOOL DISTRICT NO. 36 SURREY, B.C.



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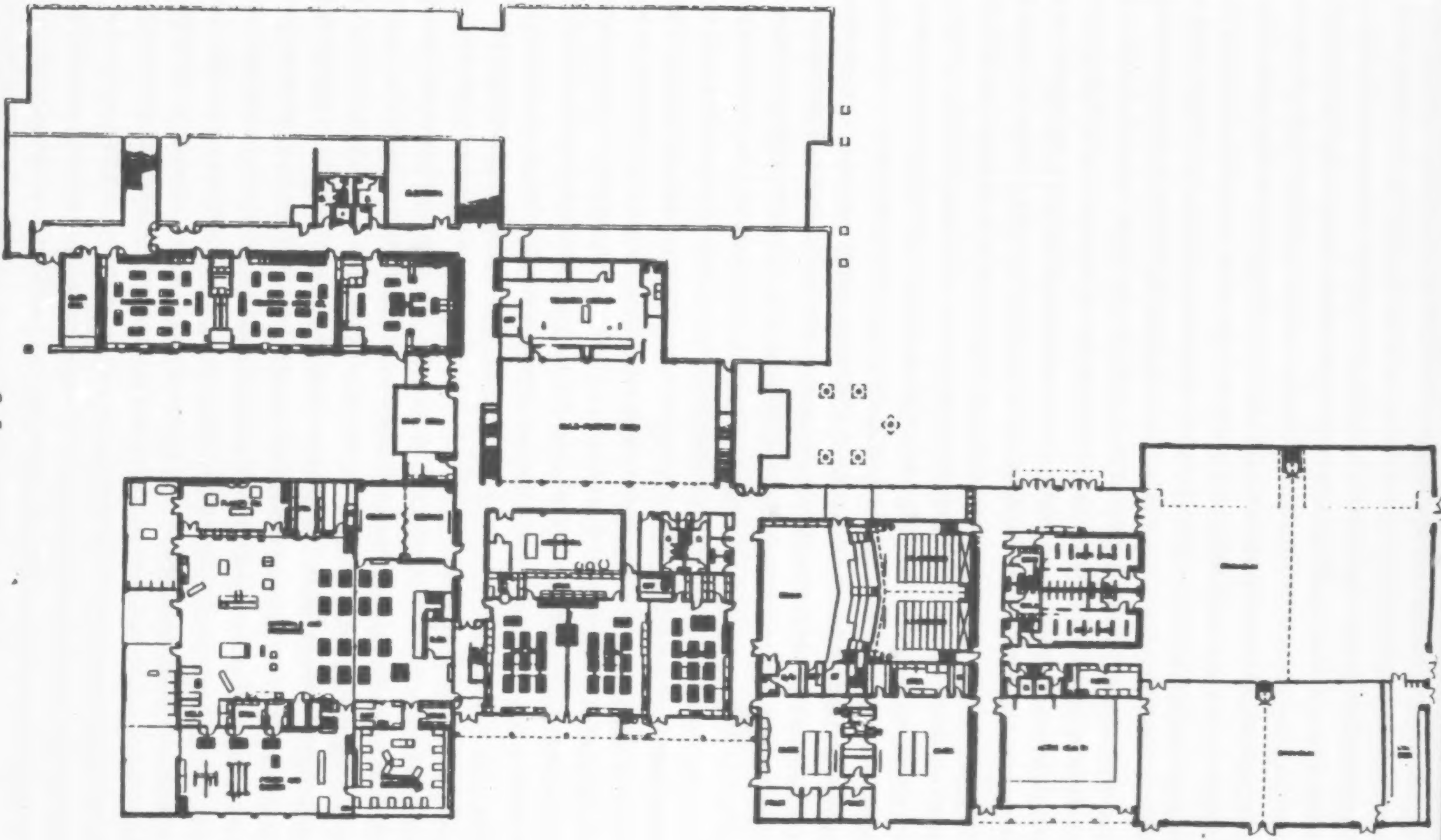
PERSPECTIVE

RD TWEEDSMUIR SECONDARY SCHOOL

SCHOOL DISTRICT NO. 36 SURREY, B.C.



LOWER FLOOR PLAN

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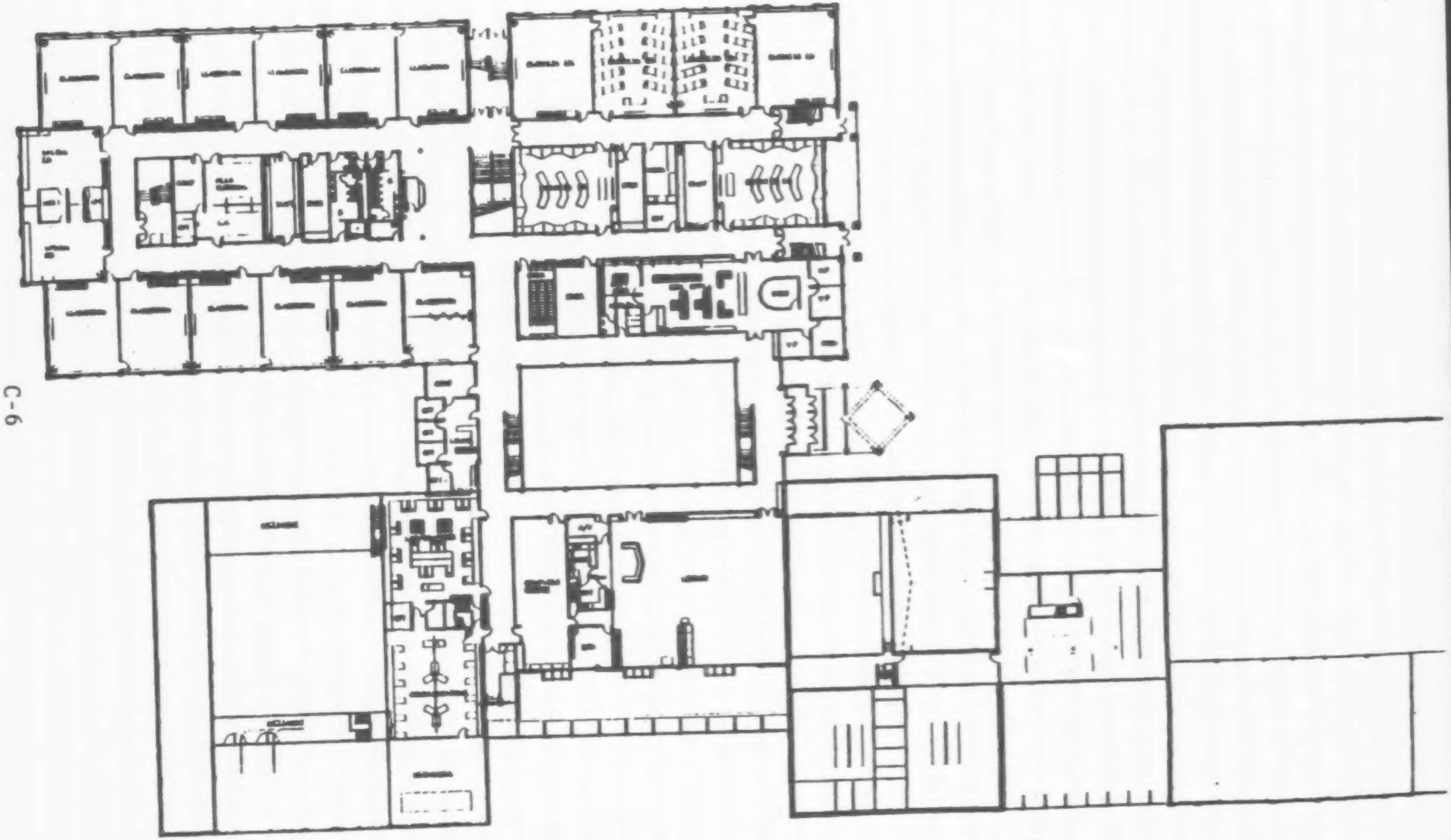
LORD TWEEDSMUIR SECONDARY SCHOO



MAIN FLOOR PLAN

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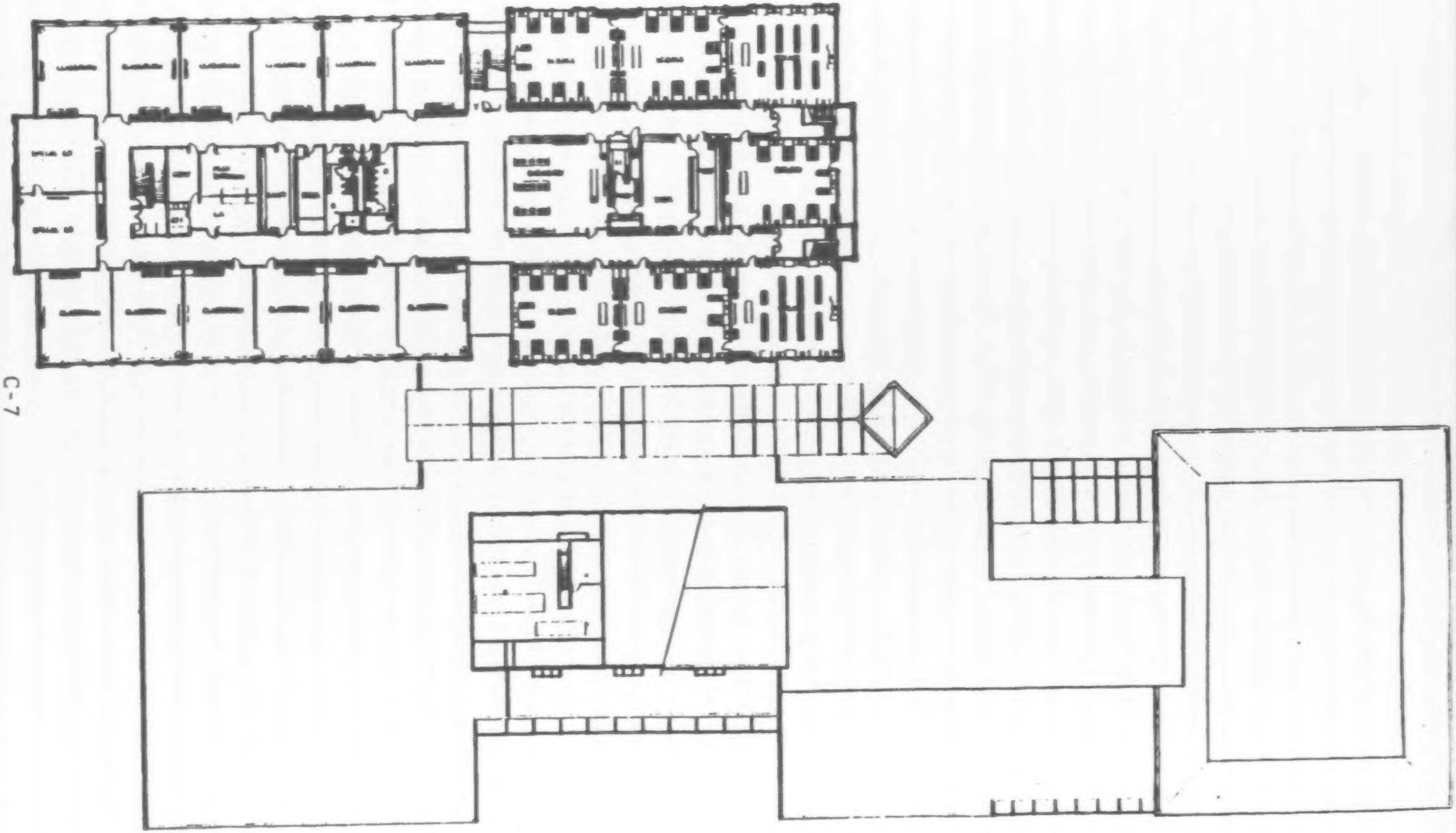
LORD TWEEDSMUIR SECONDARY SCHOO



UPPER FLOOR PLAN

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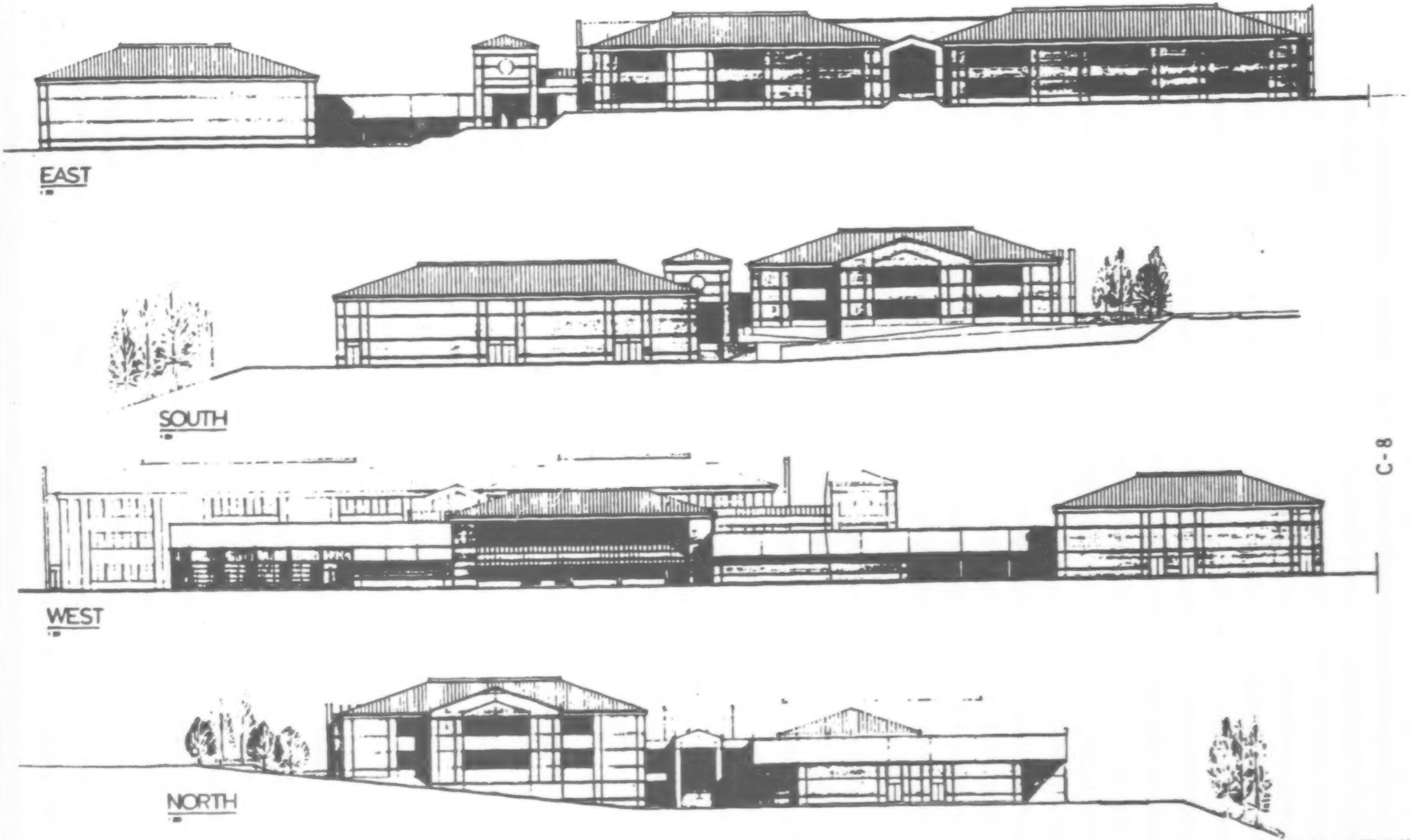

C-8

LORD TWEEDSMUIR SECONDARY SCHOOL

SCHOOL DISTRICT NO. 36 SURREY, B.C.

G.H. Graham
architect

5

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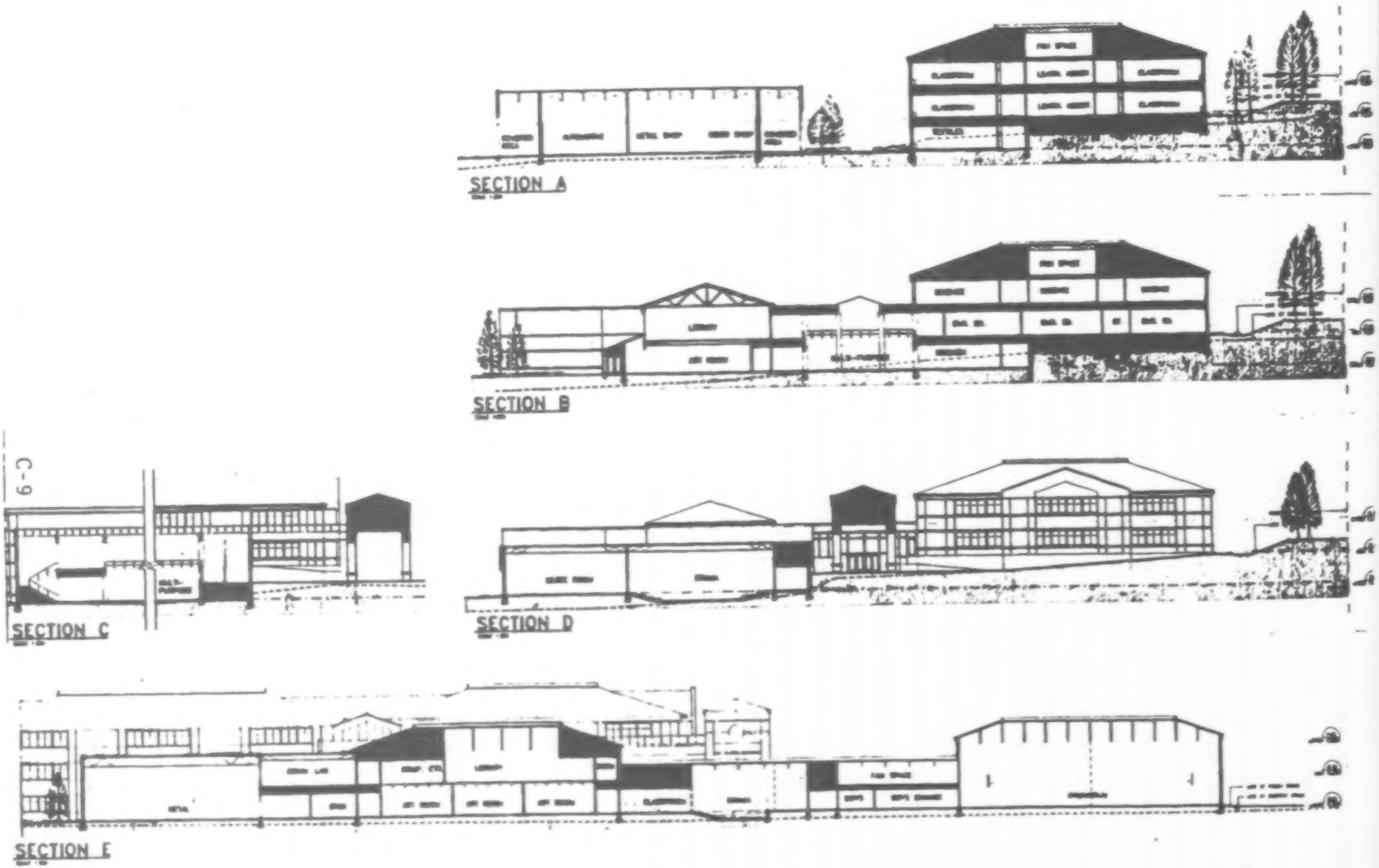
C-9



LORD TWEEDSMUIR SECONDARY SCHOOL

SCHOOL DISTRICT NO. 36 SURREY, B.C.

G.R. Graham architect

6

Appendix D: Walnut Grove Secondary School Documents

Walnut Grove Secondary School

Langley School District, British Columbia

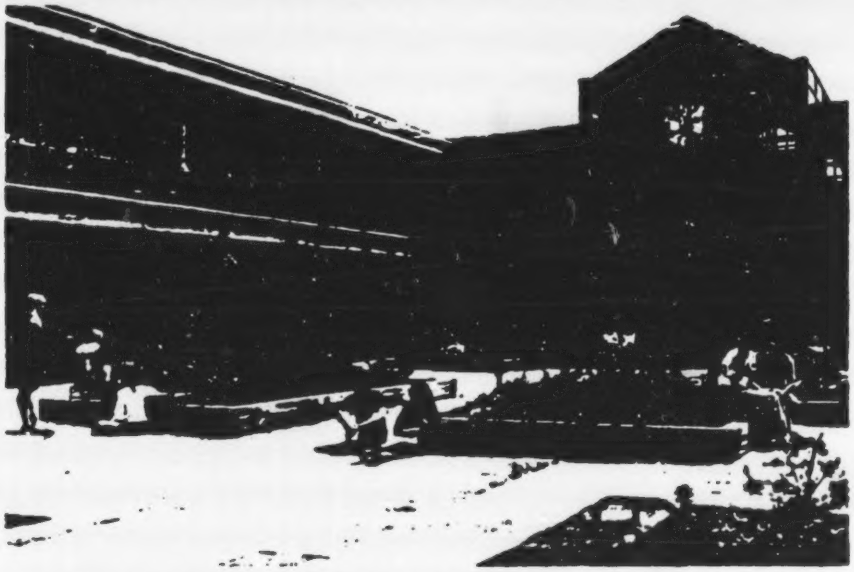
Visitation Team Members
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland
Architect Chas Chisom, CMB Architecture & Planning, Seattle
Architect John Weekes, Dull Olson Weekes Architects, Portland
Director of New Construction Mike Currie, Issaquah School District
Deputy Superintendent Stan Miller, Hillsboro School District, Oregon
Architect John Mahlum, Mahlum Nordfors McKinley Gordon Architects, Seattle
Architect David Frum, Meng Architects, Seattle
Director of Plant and Facilities Glen Anderson, Kent School District, Washington
Assistant Superintendent Sue Shannon, Educational Service District 113, Washington
Assistant Superintendent Steve Ladd, Beaverton School District, Oregon

THOMAS W. BOWEN, m.a.i.b.c.
CRISTINA MARGHETTI, m.a.i.b.c.

D. GREGG BROWN, m.a.i.b.c.
WALLACE C. WINKLER, A.Sc.T.

WITMAR H. ABELE
GEORGE BOORMAN, P.Eng.

KILLICK
METZ
BOWEN
ROSE
ARCHITECTS PLANNERS INC



WALNUT GROVE SECONDARY SCHOOL

SCHOOL DISTRICT #35 LANGLEY

Capacity - 1000 students with core for expansion to 1300
Building Area - 12,607 m^2
Building Cost - $16,000,000.00

Walnut Grove is one of the fastest growing communities in British Columbia. In 1994 there are over 1300 students and 13 portables on site. The building was designed to allow for simple additions of academic, and vocational areas by extensions of the service areas.

Soils conditions were not good and pile foundations were required. A crawlspace for complete accessibility to services and maximum flexibility for future alterations and additions lightened the site loading. The non-combustible steel frame structure is also relatively light in weight and designed to the latest seismic restraint codes.

A major feature of the design was the sloped roofs and large overhangs which are practical for sheltering the students and walls while reducing the scale of the building to fit with the residential neighbourhood. The school is seen from above as you approach from 88th Avenue and Walnut Grove Drive and, therefore, the roofs are very prominent. The roofs have a high insulation value of R.S.I. 4.4 to reduce long term operating costs. Exterior walls are brick veneer over 150 mm thick insulated steel stud walls for a total R.S.I. of 4.3.

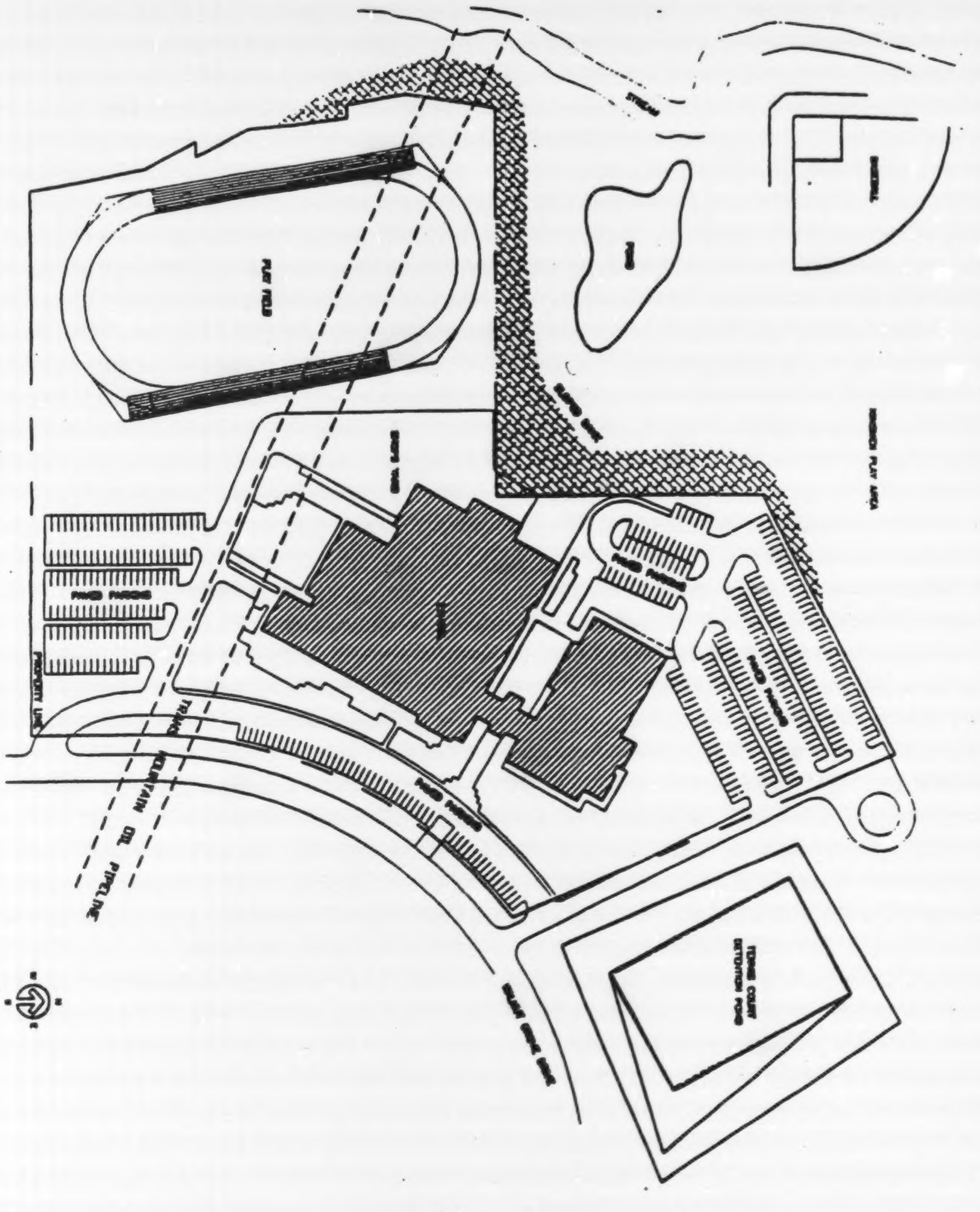
Approaching the school you enter into a prominent 2 storey central lobby with the administration area and the library strategically located to each side. A widened corridor connects the lobby to the classrooms in the Academic Wing and to the Arts, Performance and Physical Educational Wing. This "Mall" concept is quite common in today's secondary schools as it relates to the concept of openness in education and providing a place where students like to congregate. The building is "zoned" to allow evening use by the public.

All classrooms are wired for computers and for audio/video hookup to a central video room where the wiring is prepared to receive signals from two satellite dishes.

Located next to the municipal park, the school makes use of community play fields and tennis courts, while school parking is available to users of the municipal fields after school hours. The School District only had to construct one field, which they did complete with a 400 meter track. The field is irrigated and drained, grass-in-sand and is available to the community.

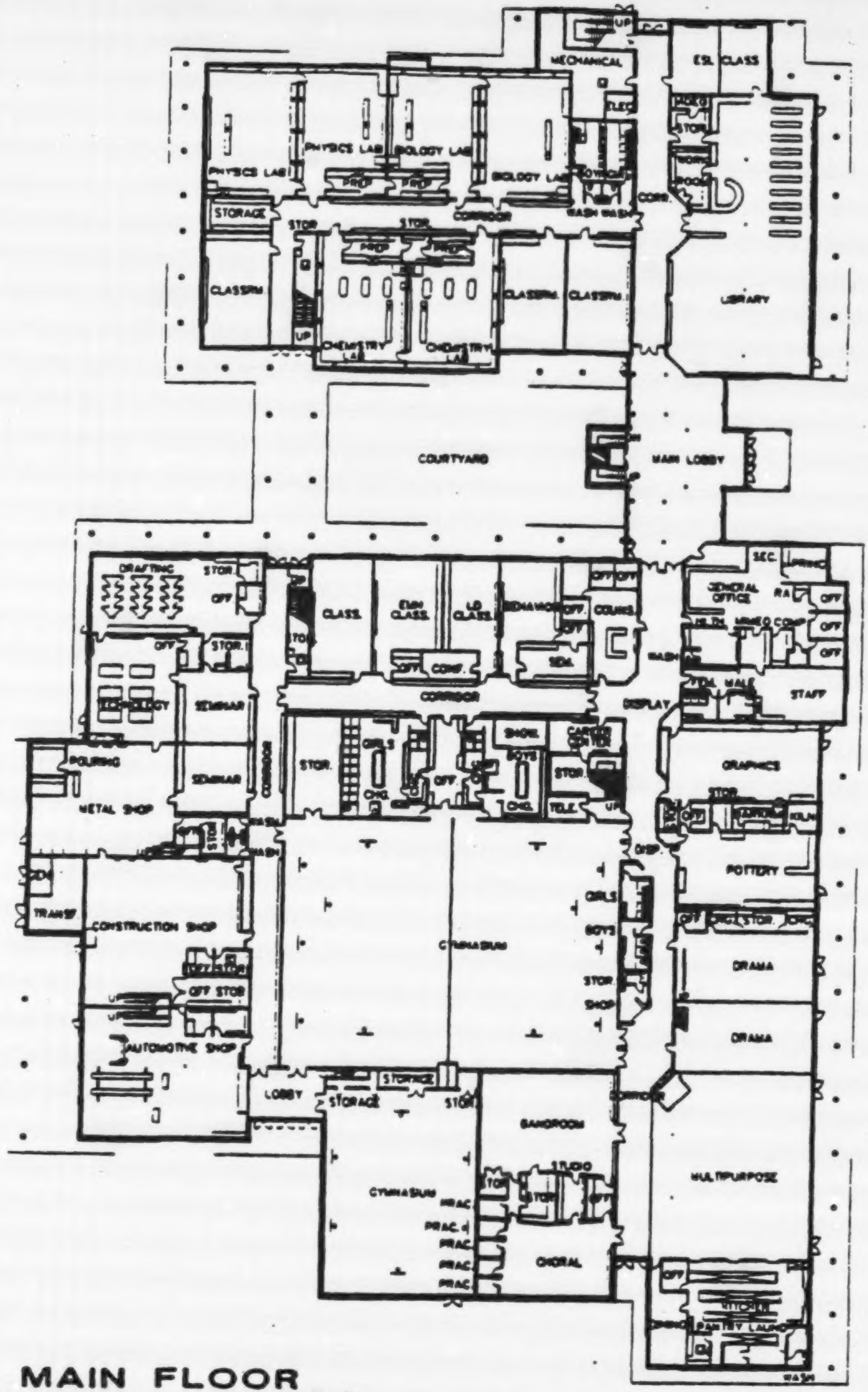
Design Team: Tom Bowen, Cristina Marghetti, Witmar Abele
Structural - Pomeroy, Mechanical - Keen Engineering, Electrical - R.A. Duff
Owner: School District #35, Langley, B.C.

1777 W. 8TH AVENUE, VANCOUVER, B.C. V6J 1V8 PH. 732-3361 FAX 732-1829 205 - 32555 SIMON AVE., CLEARBROOK, B.C. V2T 4W6 PH. 852-8888 FAX 852-9189


BASEBALL
PLAY AREA
STREAM
POND
SLOPED BANK
PAVED PARKING
TENNIS COURT
DETENTION POND
PLAY FIELD
TRANS MOUNTAIN OIL PIPELINE
PROPERTY LINE
COMMUNITY
RECREATION CENTER

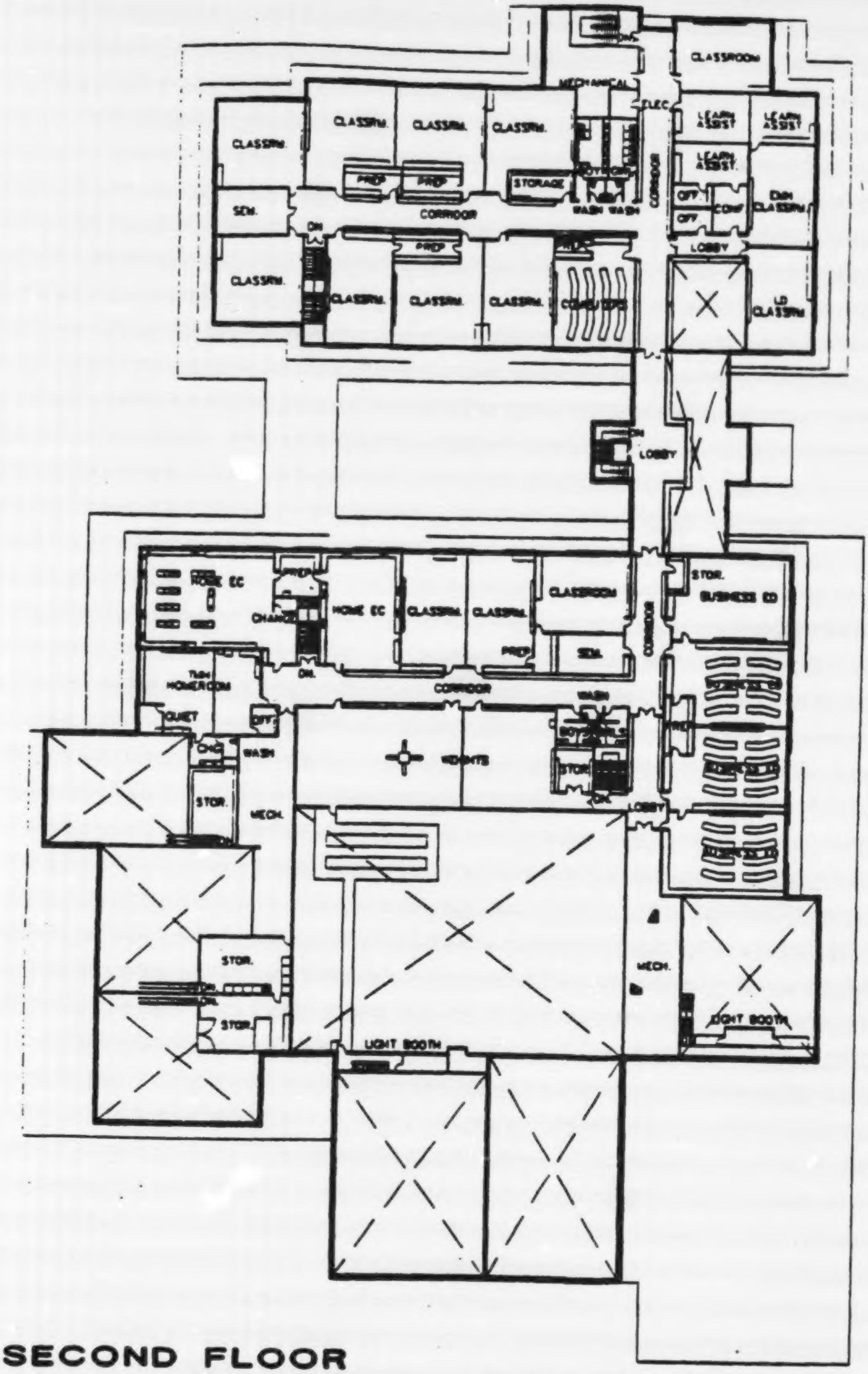
D-2

SITE PLAN



MAIN FLOOR

D-3



SECOND FLOOR

D-4

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COMPOSITE FLOOR PLANS

WALNUT GROVE
SECONDARY SCHOOL
SCHOOL DISTRICT NO.35
LANGLEY, B.C.

KILLICK
METZ
BOWEN
ROSE

92281

117

116

Appendix E: River Ridge/New Century High School

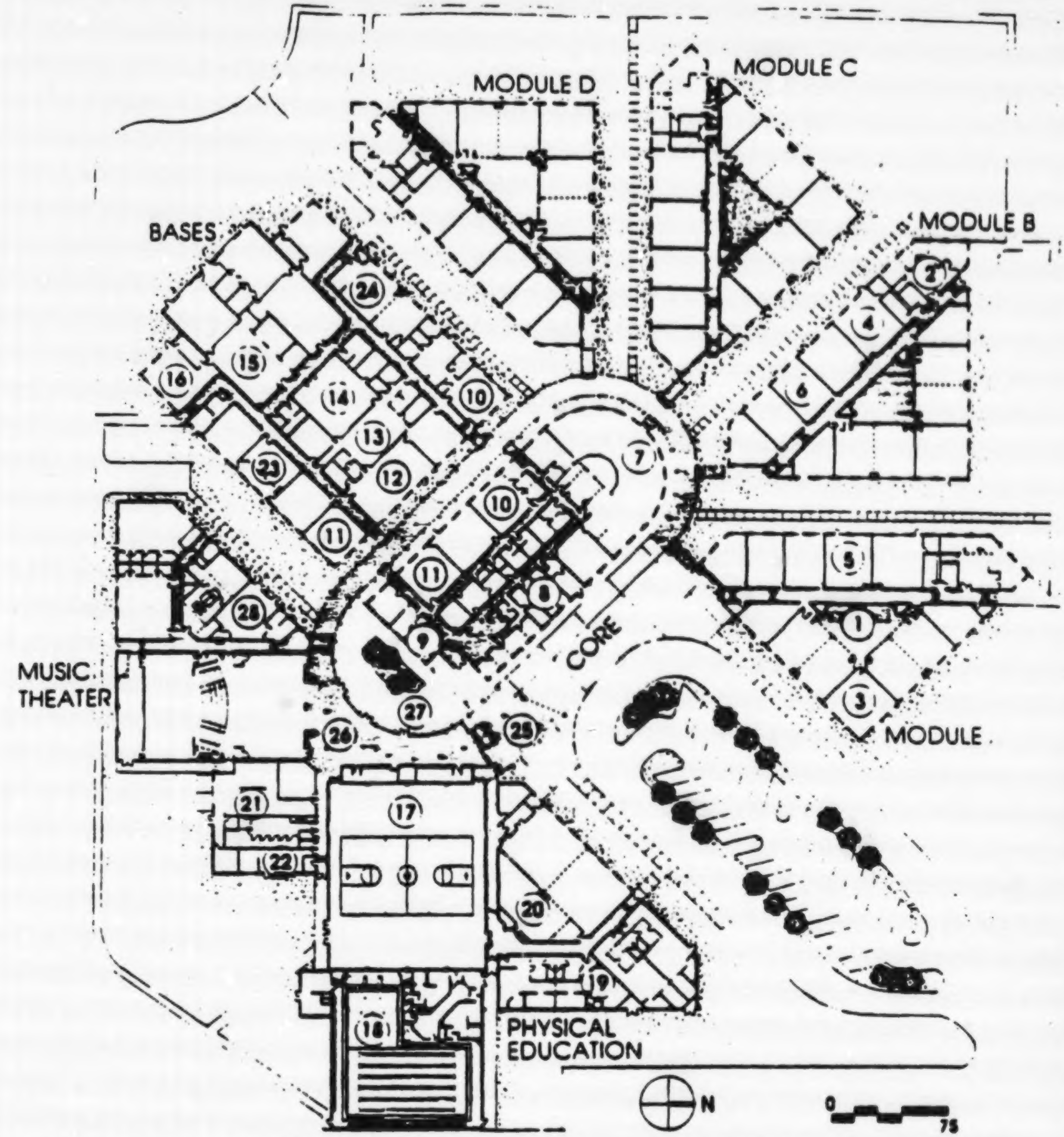
River Ridge/New Century High School

North Thurston School District, Washington

Visitation Team Members

Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland
Architect Chas Chisom, CMB Architecture & Planning, Seattle
Architect Diane Shiner, Mahlum Nordfors McKinley Gordon Architects, Seattle
Deputy Superintendent Stan Miller, Hillsboro School District, Oregon
District Project Manager Clint Marsh, Kent School District, Washington

River Ridge High Schoo
Educational Parl



1	Module Commons
2	Module Administration
3	General Purpose Classrooms
4	Science Room
5	Computer Room
6	Project Room
7	Library Media Center
8	Central Administration
9	Night School Administration
10	Special Education
11	Advanced Business Education
12	Graphics
13	Art
14	Drafting
15	Shops
16	Advanced Science
17	Gymnasium
18	Pool
19	Locker Rooms
20	Mat & Weight Rooms
21	Kitchen
22	Faculty Lounge
23	Foreign Language
24	Home and Family Life
25	Main Entry
26	Central Comm
27	Courtyard
28	Marketing & Student Store

River Ridge New Century High School
North Thurston School District

North Thurston School District has chosen an innovativ educational philosophy for its most recent high school. s based on several restructured education concepts:

- School within a school: four small student communities, each providing a home for 350 stude
- Emphasis on inter-disciplinary teaching.
- Decentralized student services: from peer principa in each "House," to each student being coupled wi staff person who serves as an advisor.
- Flexible schedule: a flexible program calls for a flexible schedule that allows students longer perio to work on projects.
- Varied groupings: students may work individually, small groups, in classes or in large lectures.
- Technology: technology is utilized as a tool rather than a topic to be taught.

Our design modeled the school's architecture to match innovation of the educational program:

- The campus style of the school provides each "House" with its autonomy, while tying all the Hous together around a building containing the library-media-center. All the buildings are bound togethe through a common vocabulary: low overhanging roofs meeting at a common eave height, and com treatment of exterior walls.
- The inter-disciplinary approach is most evident in "Bases" building that combines varied programs s as shops and advanced sciences and art, drafting graphic arts.
- Teachers are not organized by departments, but rather share planning spaces in each "house", wh more inter-disciplinary interaction may take place.
- All teaching spaces allow for flexible utilization: fr movable partitions in the classrooms to combining specialized spaces in the "Bases" building.
- The academic end of the campus, the Houses, m the social and athletic end--the gym and the theat at a central commons.
- The school is thoroughly networked with over 50 computers. Students and teachers have access computers in every classroom.

Square Footage:	*175,000*
Construction Cost:	*$20 million*
Opening Date	*September 1993*

COMPREHENSIVE HIGH SCHOOL PLANNING
CATEGORIES FOR ASSUMPTIONS
VISIONING ACTIVITY

I. SOCIETAL TRENDS AND PREDICTIONS:

1. Students will represent an increasingly diverse society. Disparity of ability to conform to traditional educational expectations is likely to continue to increase among young people. The schools will play an active role in the remediation of social and health issues to meet the social, emotional, physical, and educational needs of students. Curriculum and the structure for instruction must be responsive to these needs.

2. A changing society and technology influence the essential skills and attitudes which must be provided to meet the vocational and avocational futures for young people.

3. Community aspirations and values must be reflected in the high school program and the facility which are developed.

4. Demands upon the educational enterprise are not and will not be stable. Problems and issues arising in society at large will continue to pressure the school system to modify practices, content, and processes.

5. The district educational philosophy, mission, goals, areas of emphasis, and demographic data will guide the development of the high school. The Strategic Planning Assumptions are pertinent to the planning.

6. Society will insist upon more accountability for utilization of financial resources.

7. The public will demand to know the outcomes of the educational program being provided.

II. SCHOOLS AND INSTRUCTION/ORGANIZATION AND STRUCTURE

1. A school and its program should provide the framework for flexibility needed to meet the diverse needs of students. Flexibility in size, use of time, space, curriculum, and instruction should be provided as appropriate.

2. Instruction, which should be research based, will be a priority and reflect effective practices which will enable students to acquire essential skills for the future. All staff, as adult learners, will be supported by a comprehensive staff development program.

3. Schools make a difference. Effective schools research provides a foundation for establishing a basic philosophical and organizational structure. Effective schools require effective leadership from all staff members.

4. A school environment which nurtures the individual, conveys a sense of belonging, offers opportunity, and fosters student self-esteem and hope is necessary.

5. Although the negative impact of overly large schools is recognized, the factor of the size of a high school is less significant than how the school is organized, how the student is treated, how instruction is delivered, and how the building is arranged.

6. The community, the home, and parents must be involved in the delivery of educational services to students.

III. STUDENT LEARNER

1. The needs of students may be described in relatively enduring classifications as follows:

- a. Need to communicate: read, write, speak, listen.
- b. Need to think in complex fashion: access information, analyze, evaluate, synthesize.
- c. Need to have a sense of place and time: historical perspective, current and future perspectives.
- d. Need to be able to judge relationships: space, quantity, causes and effect, ethics, character, and behavior.
- e. Need for health: physical, mental, emotional, social.
- f. Need to understand the relationship between learning and life experience.

2. Educational opportunities which accommodate the socio-economic and cultural characteristics of students will be provided for all students.

3. Technology will not replace the teacher and the human element of learning but will be available as a tool for the enhancement of learning, managing, evaluating, and communicating.

4. All young people have the capacity to learn. What they learn should be individually challenging. How, where, and when they learn should be determined by what works best for them. Schools will accommodate different learning styles by expanding the variety of instructional methods available to students and teachers.

IV. PLANNING

1. A clear and vital mission will be developed for the school; common purposes and educational priorities will be widely shared.

2. Every decision will be made on behalf of students and take into account diverse needs.

3. In order to meet the needs of all students, the resources and services of the total community must be utilized.

V GOALS/PRODUCTS

1. The goal of the public school organization is the successful learning of all of our students.

2. We educate to enhance the capacity of students to attain (1) informed effectiveness through critical thinking and the ideal of lifelong learning, (2) a sense of responsible citizenship (how to act to maintain freedom), and (3) a sense of empowerment with responsibility, and (4) a sense of belonging and membership in society.

3. The goals and programs of the high school will be embraced by both the community and professional educators.

4. As a result of building a program of instruction ideally appropriate for individual students, teachers will be empowered and encouraged to remain in the profession as an additional benefit.

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POTENTIAL CONSTRAINTS and CHALLENGES

1. We should seek the means to achieve educational goals even though they require creative ways to meet regulations.

2. We must structure the new high school around ideas of what will work best for students, not against fear of requirements over which we may have no control.

3. We must examine existing traditions, values, and policies and make adjustments when necessary to provide the desired student learning opportunities.

4. Recognizing that resources for public education are unlikely to increase substantially, sufficient resources must be made available to support the development and implementation of a third comprehensive high school. Available resources, therefore, will be focused on long-term development of programs which enable students to acquire essential skills of the future.

5. Extraordinary leadership, which can make a difference in the development and implementation of an effective secondary school, must be provided.

6. Even though a potential teacher shortage may develop, a viable pool of appropriately qualified teachers must be available from which to select the faculty for the high school.

7. Coordination efforts with social and health agencies will be needed to enable meeting the social, emotional, physical, and eductional needs of students.

8. Perhaps the greatest challenge is creating a supporting and enabling environment which promotes adaptation to changing educational programs and services.

Revised, June 1989

Appendix F: Colville High School Documents

Colville High School

Colville School District, Washington

Visitation Team Members
Facilitator Dick Withycombe, Withycombe Scotten & Associates, Portland
Architect Bob Bryan, CMB Architecture & Planning, Seattle
Superintendent George Murdock, Pasco School District, Washington
Director of Facilities (retired) Jim Jennings, Highline School District, Washington
Director of Facilities Planning Norm Felix, Mukilteo School District, Washington
Executive Director of Operations Tom Brandon, Pasco School District, Washington

WELCOME TO THE *NEW*

COLVILLE HIGH SCHOOL

These new facilities, and the property on which they stand, have been provided by the citizens of Colville for the education of our children and for a variety of school/ community activities.

The school board, administrators, school staff, community members, and students involved in this project are very proud of these new facilities. We hope you enjoy your time in this new building and surrounding school grounds. Please remember that we are all guests here and we should make every effort to treat these facilities as we would our own new home.

Inside is a map to help orient you to the building. If you have questions, please direct them to any staff member or the administrative office. We welcome your comments and questions.

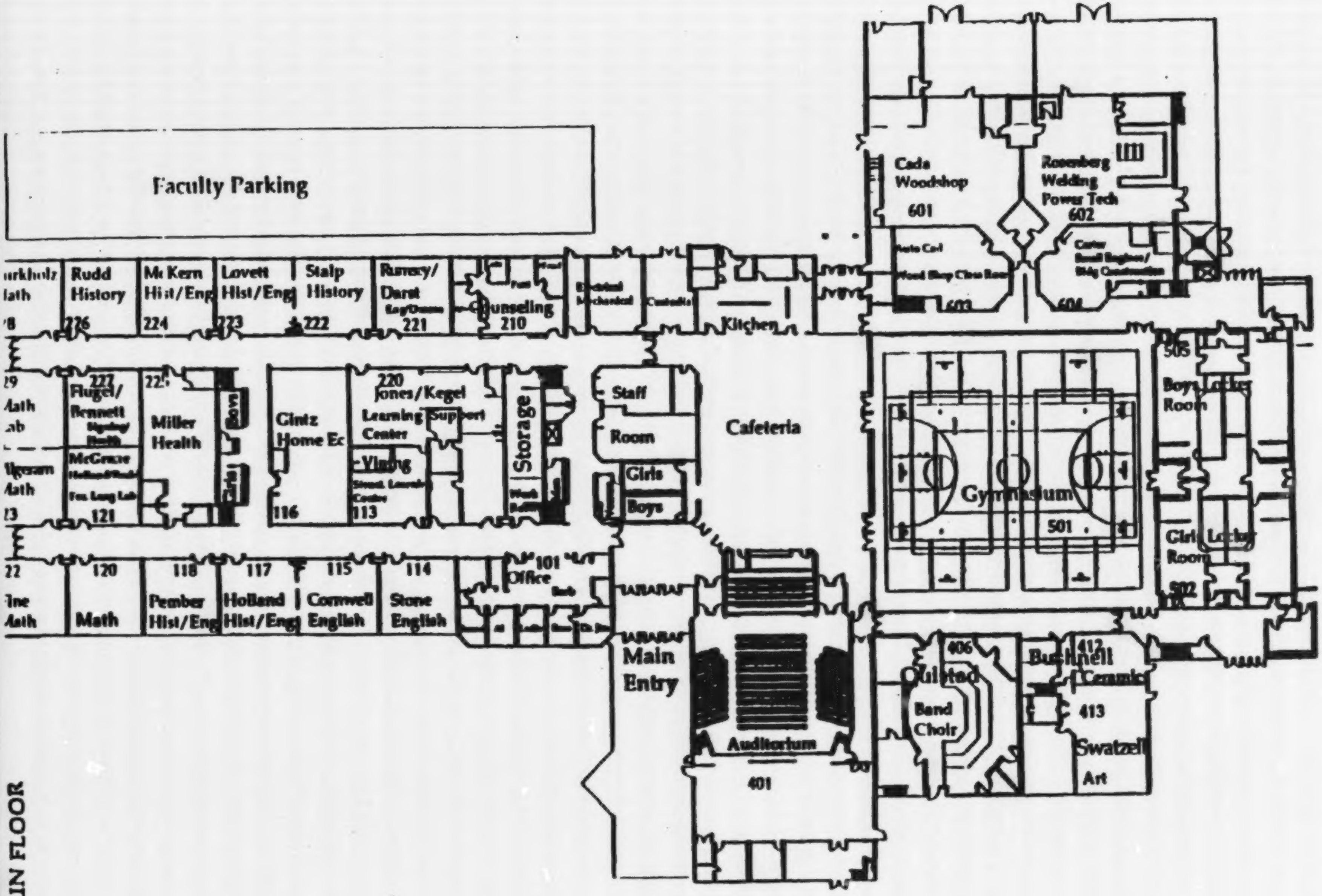
4th Draft

COLVILLE HIGH SCHOOL

FACILITIES OVERVIEW

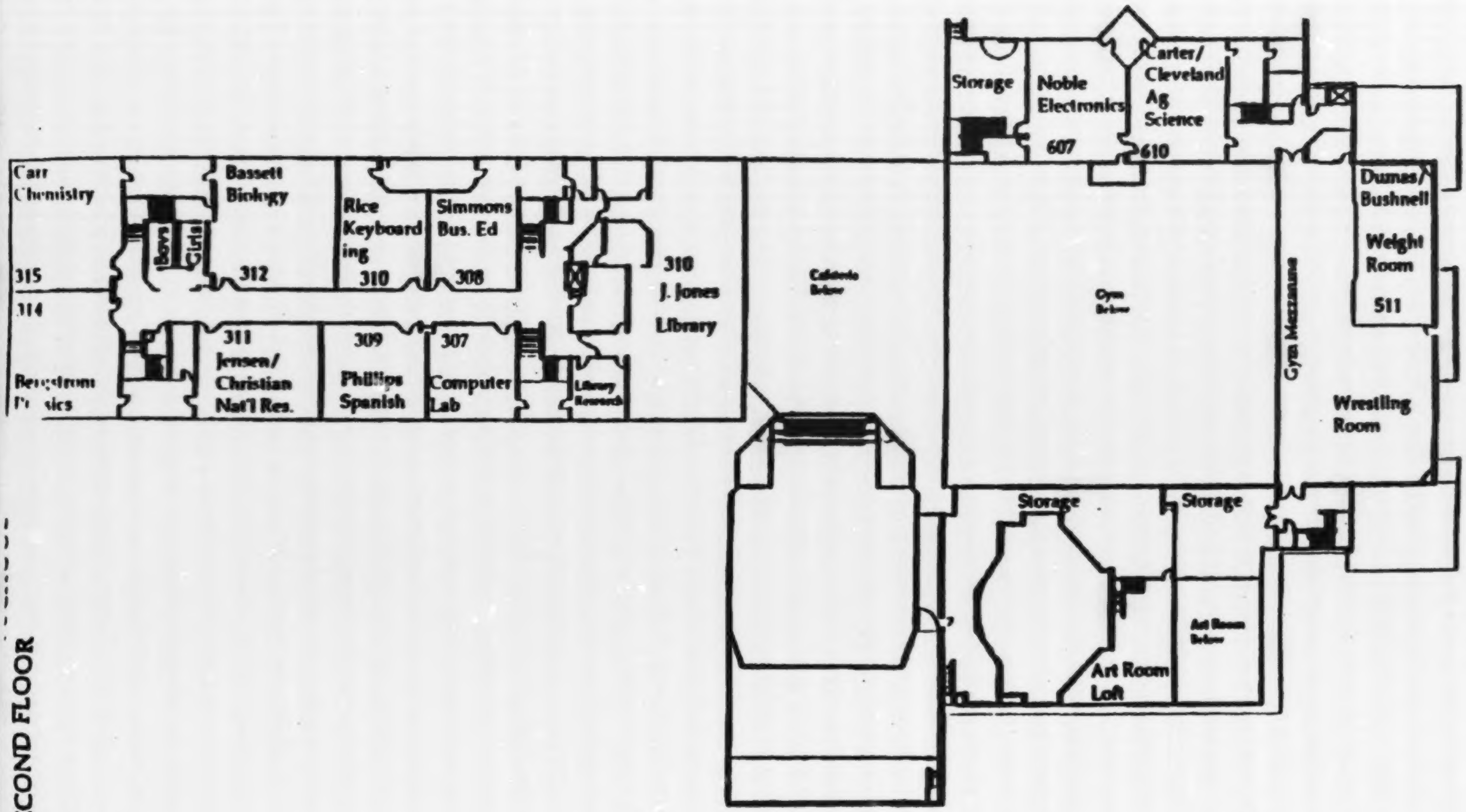
SUGGESTED SQUARE FOOT ALLOCATIONS:

SUBJECT AREA	TEACHING STATIONS NOW AND SQUARE FEET	TEACHING STATIONS PROJECTED & S.F.
English	4 @ 900 = 3600	5 @ 900 = 4500
Math	3 @ 900 = 2700	5 @ 900 = 4500
Social Studies	3 @ 900 = 2700	4 @ 900 = 3600
Science - Total	4500 w/storage	Total = 6615
	1 @ 1200	
	1 @ 1500 w/storage	3 @ 1530 = 4590
	1 @ 1800 (Chem w/storage)	1 @ 2025 w/storage
Health	1 @ 900	1 @ 1350
Art	1 @ 1500	3 @ 2800
Computer Center	1 @ 750	1 @ 1500
Foreign Language	1 @ 900	1 @ 1100
Special Education	2 @ 900	2.5 @ 2700
Home Ec	1 @ 1800	1 @ 1800
Business Ed	2 @ 900 w/300 storage = 2100	2 @ 2600
Counseling	1 @ 600	1 @ 1150
Media Center	1 @ 2850 (3600 both sides)	1 @ 3600
Offices/Staff Room	1 @ 1800 (total area)	Total = 1800
Cafeteria/Cooks	5600 (eating area/kit/stor/restrooms)	7500
PE/Gymnasium	14,600	23,997
Auditorium	-0-	7,000
Music/Choral/Instrumental	-0-	1 @ 2500
Hallways/Custodial	4700 (actual)	15% = 13,650


Faculty Parking
urkholz
lath
'8
Rudd
History
226
Mc Kern
Hist/Eng
224
Lovett
Hist/Eng
223
Stalp
History
222
Ramsey/
Darst
221
Counseling
210
Kitchen
Cafeteria
Cada
Woodshop
601
Rosenberg
Welding
Power Tech
602
Auto Carl
Wood Shop Class Room
603
Carter
Small Engines/
Bldg Construction
604
29
Math
Lab
Ulgesam
Math
23
227
Flugel/
Bennett
McGrane
121
225
Miller
Health
Boys
Girls
Gintz
Home Ec
116
220
Jones/Kegel
Learning Support
Center
Vining
113
Storage
Staff
Room
Girls
Boys
22
Line
Math
120
Math
118
Pember
Hist/Eng
117
Holland
Hist/Eng
115
Cornwell
English
114
Stone
English
101
Office
Main
Entry
Auditorium
401
Gymnasium
501
505
Boys Locker
Room
Girls Locker
Room
502
406
Oulstad
Band
Choir
412
Bushnell
Ceramic
413
Swatzell
Art

MAIN FLOOR

SECOND FLOOR



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SCHOOL STATISTICS

OWNER: Colville School District #115

PRIME CONTRACTOR: Swank Construction - Valier. Montana

TOTAL AREA OF PROJECT: 37.4 Acres

TOTAL AREA OF SCHOOL: 120,000 Square Feet (approx.)

TOTAL ROOF AREA: 89,200 Square Feet (approx.)

TOTAL AREA OF HALLWAYS: 1,710 Feet (.33 mile)

BUILDING CAPACITY: 850 Students

TOTAL NUMBER OF TEACHING STATIONS: 50

SEATING CAPACITY OF AUDITORIUM: 400

SEATING CAPACITY OF GYM BLEACHERS: 1268

SEATING CAPACITY OF OUTDOOR BLEACHERS: 840 permanent (with room for 420 seat possible future portable bleachers behind permanent)

OUTDOOR FIELDS: Upon completion of contractors work, all fields will be irrigated and seeded: Lighted Football Field; Lighted Eight-Lane All-Weather Track with Long Jump, High Jump, Discus, and Javelin Areas; Two Softball Fields; One Baseball Field; One Soccer Field; Four Tennis Courts

TOTAL CONCRETE POURED: 9,000 cubic yards (approx.)

TOTAL WEIGHT OF METAL ON ROOF AND SIDE: 43.6 tons

COSTS: Local Funds (bonds) = $6,026,8032

State Funds = $7,021,919

Total Funding = $13,048,722

Proposed District #115 Mission Statement, Colville High School Goal, and Essential "Tools for Success"

In the 1990's the Colville School District must prepare all students for living in a 21st century world characterized by global technology, cultural diversity, and lifelong learning.

Every CHS graduate must be equipped to enter an apprenticeship, a trade or a technical school, a community college, and/or a four year college or university.

The essential "Tools for Success" include:

- A strong work ethic
- Quality basic skills in reading, writing, speaking, math, and science
- Study skills for independent, lifelong learning
- Problem solving and decision making skills
- Teamwork skills
- Global awareness
- Initial career direction
- Positive presentation of self
- Technological literacy

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ERIC
Educational Resources Information Center

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